



NEW ZEALAND JOURNAL OF AGRICULTURE

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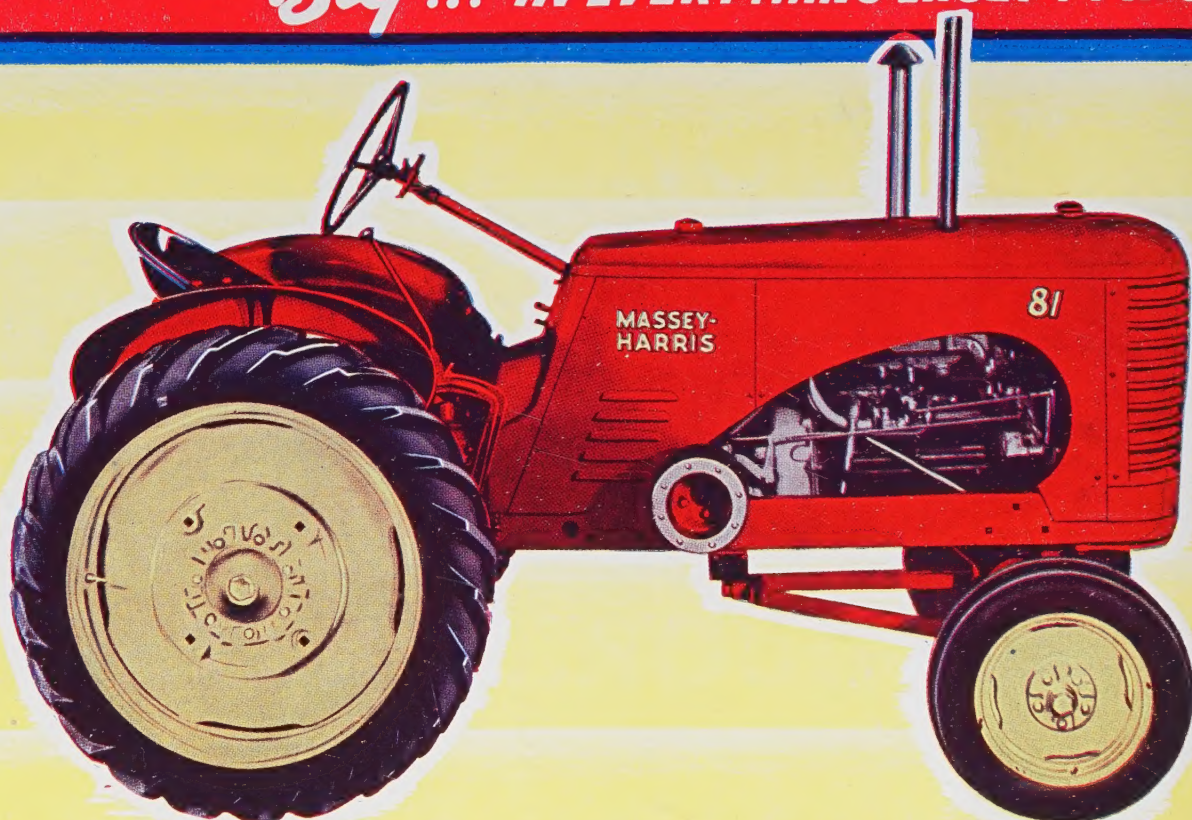
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While there is no doubt that essential crops will not be left unharvested through lack of labour, the farmer's fear is always present, and justifiably so, of a lack of labour for permanent work. The manner in which local effort can be quickly organised to harvest crops was instanced in the Gore district last season when the

MANPOWER ON FARMS

produce of many acres of linen flax was pulled with the willing assistance of Gore townspeople, and similarly for other crops around Waimate. The writer outlines the farmer's problem for both classes of labour and steps which can be taken to relieve the loss of manpower.

— By —

J. E. BELL, Secretary, National Council of Primary Production, Wellington.

DURING this war farmers are experiencing increasing difficulties in obtaining supplies of materials and labour so that they can continue to produce the Empire's food requirements. Of the two, manpower appears to be the more difficult problem. In the course of the war numbers of men have been drawn into the army, and the loss of these workers to agriculture has impaired the efficiency of many farms. It would appear that the withdrawal of manpower from the country will continue until the end of the war, and every farmer is concerned as to how he can continue to produce our vital necessities while this drain of experienced workers and farmers continues.

A change in the manpower position is being made at the present time by a reversal of the process and the withdrawal of thousands of men from the Army to work on farms. No one who has studied the military position carefully will suggest that this reversal is

anything but an expedient. Certainly it can be nothing but an expedient in regard to the men engaged on other than seasonal work on farms. There is no doubt that a large number of men will be kept in this country for home defence and to act as a reserve for other theatres of war. Except when the enemy actually threatens our shores numbers of these men should be available to help farmers at busy times.

It is in regard to permanent labour, however, that adjustments must be made. I know farmers are reluctant to accept inexperienced workers, but as time goes on they will realise that there will be no alternative as far as permanent labour is concerned. For this reason I regard the development of the Women's Land Service to be of immense importance to agriculture in New Zealand. In this article I intend to discuss methods whereby farmers can secure labour on their farms, and I shall discuss it under two headings—seasonal and permanent.

Seasonal

Secondary Schoolboys: At the present time an intensive drive is being undertaken to secure the services of high school boys for farmers during December, January and February. During half of this period the schools will be open, but headmasters will give permission for boys to be absent, if the District Manpower Officer certifies that the boy is engaged on important farm work on his parents' farm or otherwise. The boys will be carefully selected, and many will be strong, exceptionally fit young men of about 17 to 18 years of age. These high school boys have been used in the past, and farmers have reported highly of their services. The main difficulty in the past has been that, despite intensive publicity during October and November, farmers have failed to notify vacancies before the schools break up.

The success of the scheme is bound up with the ability of farmers to make known their requirements before the end of the school term. This year district councils of Primary Production have been asked to see that applications for holiday labour are lodged in time. Farmers should present their applications as early as possible to the

District Production Committee. The District Committees are being asked to forward the applications to arrive in the hands of the secretary of the District Council by the 21st November.

Farmers will be expected to pay the return fares of boys who go to work on their farms. The Railway Department has granted concessions of approximately 60 per cent. on adult ordinary return fares to schoolboys travelling to work on farms on presentation of certificates signed by the headmaster or the secretary of the Youth Centre or the District Manpower Officer.

The farmers will be expected to pay no less than award wages, which amount to £1 2s. per week where the boy is under 17 years of age; 17 to 18 years, £1 9s.; 18 to 19, £1 16s., plus keep on sheep and dairy farms. Farmers may be concerned about paying these wages to inexperienced boys, but they will realise that, owing to the prevailing rates for labour in the cities, there is keen competition for the services of these boys. Boys, however, will be induced to take the lower wages offering in the country on account of the more interesting and healthy type of work.

Before boys are placed on farms the farmer will be contacted and advised concerning the prospective employee, and they will therefore know in ad-

vance approximately their commitments in regard to railway fares.

There may be other schemes than that I have outlined for the utilisation of schoolboys, but these should not be confused with the general scheme. Those securing high school boys can do a great deal to relieve the labour difficulties of the farmers' busy season. The scheme should cover such work as general farm work, haymaking, grain harvesting, market gardening, fruit picking, grading and packing, and many other like farming activities.

As far as conditions on the farm are concerned the boy should be treated as a member of the family, and his accommodation should be comparable with that of the family, with access to the same or similar toilet and bath facilities. In the past there have been few or no complaints in regard to the treatment accorded the boys by farmers. Most farmers are considerate in regard to these lads and give them work that is reasonably congenial. In view of our future difficulties, District Councils should see that no boy is unfairly treated in respect of either his accommodation or the type of work that he has to perform and so spoil the good record farmers have achieved so far.

Teachers and Students: Normally a number of teachers and students, particularly the latter, do seasonal work

during their vacations. Encouragement will be given to this practice, and in addition single men or married men without children are to be directed to seasonal occupations if they are fit for it. Private arrangements that have been made or are being made will not be interfered with, providing the District Manpower Officer is immediately informed of full particulars and proof of the proposed work. Other teachers and students may be directed if they volunteer for seasonal work. Students who normally enter camp for three months' training will also be available for seasonal work. Farmers desiring seasonal labour of this type should make an approach to the Manpower Officer at one of the four main centres.

Public Works Employees: Public Works men experienced in seasonal work may be released by application through the officer in charge of the work to the nearest District Manpower Officer for essential seasonal occupations, which include shearing operations, haymaking, fruit picking and sorting in orchards, tobacco picking and curing, and digging of potatoes. It is no doubt realised that the Public Works Department have several works under construction which are vital to the defence of the Dominion, and that objection will be raised to the transfer of efficient workers or keymen from

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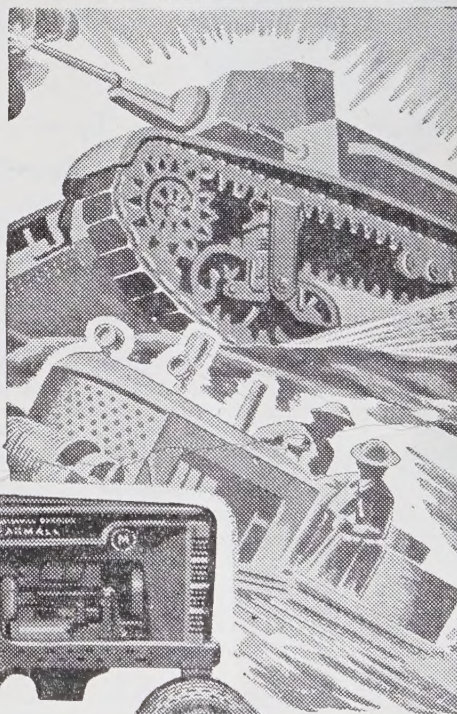
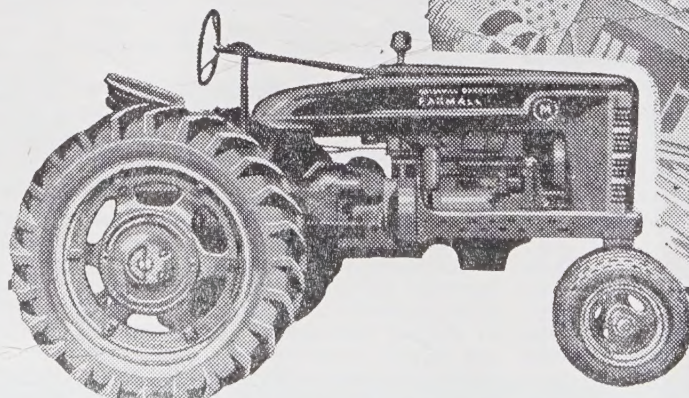
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these works unless they can be replaced by equally efficient workers. Other workmen engaged in work of importance may also be refused release.

Officers in charge of works may allow workmen to assist local farmers with haymaking or harvesting for a few days without obtaining the permission of the District Manpower Officer, and workmen may be allowed to assist during the Christmas and New Year vacations.

Army: With the exception of certain vital Army units a survey of men willing and suitable to undertake general farm work, harvesting and planting, or employment in freezing works is being made. Such a survey has already been made for dairy factory workers and shearing. A farmer wishing a man or a number of men to assist him may obtain the services of these without nomination, by approach to the District Manpower Officer. If this officer is unable to supply labour from civilian sources, some of which are indicated above, then he will, if a War Cabinet authority for release has been issued, apply to the Army Units to release men available and suitable for the particular type of work. If the leave asked for is for a short term seasonal work, such as for planting or harvesting of crops, the Unit Commander has authority to grant leave not exceeding 40 days. There will be no necessity for anyone to obtain the permission of the Appeal Board for this release. If the leave is for a longer term, such as for shearing, dairy factory work, or employment in freezing works, release will be given for the 40 days, but to obtain extension of the leave beyond the 40 days, the employer must make immediate application to the Armed Forces Appeal Board for such extension. Applications either to the Manpower Officer or to the Appeal Board may be made through the District Council of Primary Production.

Jurisdiction to grant release of any man from the Army is vested in the military authorities, and Appeal Boards and Manpower Officers dealing with applications are acting only in an advisory capacity. However, the Army has been apprised of the difficulties facing primary producers in this country in regard to seasonal labour, and it is expected that, except in isolated instances, reasonable requests will not be refused.

Permanent Labour

Women's Land Service: Steps are being taken by the Government to re-organise the Women's Land Corps, now to be known as the Women's Land Service, and two lady M.P.'s have been touring the country encouraging young women to undertake work on farms and advising farmers to give the scheme a thorough trial. As I have

previously stated, the farmers' main difficulty in the future will undoubtedly be in maintaining an efficient permanent staff. As more and more experienced workers are withdrawn from farming, replacement will necessarily have to be made by the training of inexperienced personnel. Young women are being encouraged to apply through the district offices of the Women's War Service Auxiliary, the District Manpower Officers, or the offices of the District Primary Production Councils for enrolment in the Women's Land Service. Farmers are to make their applications for a woman worker direct to the nearest District Primary Production Council.

The women are to be equipped with working clothes and after one month's satisfactory working service with a "dress" uniform at the State's expense. Untrained personnel will be paid £2 1s. a week plus keep, or £3 1s. without keep on dairy farms. On general farms the payment will be £1 16s. and keep, or £2 16s. without keep. Trained personnel will be paid 7s. 6d. a week above the rates for untrained workers. If a farmer accepts an inexperienced worker and undertakes to train her for farm work, he will be paid a subsidy of £1 a week for the first three months and 12s. 6d. per week for the second three months of training. At the end of six months the subsidy ceases, but the training subsidy will not be paid for any mem-

ber of the Women's Land Service upon a farm owned or part owned by a relative or upon which she has at any time been normally resident whether in a paid capacity or not.

The transport of the worker to her new position will be paid by the employer where the distance from the District Manpower Office nearest the member's normal residence, or from her own residence (whichever is the



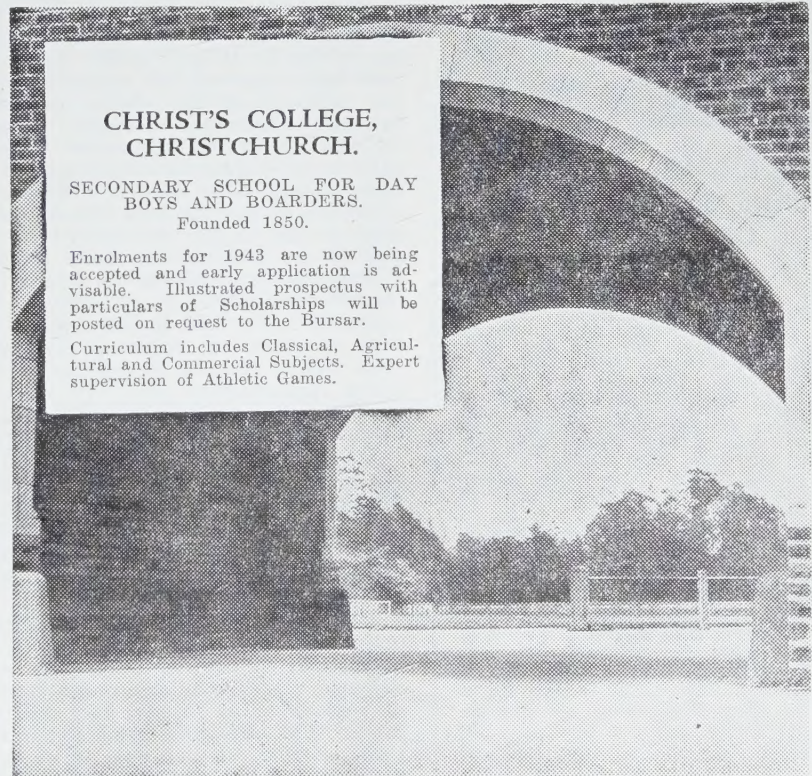
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lesser) does not exceed 30 miles. If the distance is greater than 30 miles, fares will be met by the State. Reasonable accommodation, toilet and bath facilities must be made available to the members.

Where the demand warrants it a camp for six girls or more under the charge of a senior girl or matron may be established by the National Service Department. These girls will then be available for work in the surrounding district.

Farmers and members of the Service must give at least seven days' notice of intention to terminate employment. The holidays will be those laid down under the Agricultural Workers Act, 1936.

Pensioners: Until recently pensioners could not earn above a certain sum of money without affecting their pension. Such a regulation has caused many pensioners to refrain from undertaking a certain amount of work, but this has now been withdrawn and pensioners are at liberty to earn as much as they like without any effect on their pension when the work ceases. This will encourage pensioners to undertake a considerable amount of work and relieve the labour position. Under the new regulations a pensioner may earn for instance £5 a week for the first six months of the year and receive a full pension for the remaining six months.

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Army, Navy and Air Force: Almost one half of the agricultural workers who have entered the Army have been withdrawn recently to assist farmers. As I have previously mentioned, the continuation of this practice to the present degree cannot be guaranteed. Applications for release from camp are made by the Primary Production Council or employer to the Appeal Board. If a farmer does not know of a suitable soldier in camp whom he wishes to employ he may approach the Manpower Officer, and ask permission to inspect the lists of men willing and suitable to undertake general farming work. He may then select personnel from these lists, which have been prepared by Army Units.

The recommendation of the Appeal Board is then referred to the Army Unit concerned. If the man applied for is a key man, on leave, or sick, or for any other reason cannot at once be released, no release is permitted. In all other cases the Unit Commander will at once grant the man leave without pay for a provisional period of 28 days, or less, depending upon the recommendation of the Appeal Board. In the meantime his case is being considered by Army Headquarters, which if it approves advises the soldier by telegram. If it disapproves, the soldier must return to his unit on the expiration of his provisional release of 28 days or less.

The farmer may wish an extension of the leave that has been granted when he subsequently finds that this leave is insufficient for the work he has on hand. If such is the case, he must again approach the Appeal Board per medium, if he wishes, of the Primary Production Council. The Appeal Board's recommendation in regard to his request is referred to the Area Officer. If the extension required is 28 days or less the Area Officer may approve and extend the leave. However, if he disapproves, Army Headquarters are advised and the matter is further considered. If the period required is more than 28 days, then 14 days' extension is approved by the Area Officer pending consideration by Army Headquarters, who will subsequently advise the soldier whether the extension is approved or not.

Releases from the Navy and Air Force are referred by the employer or Primary Production Council to the Appeal Board, whose recommendation is forwarded through the National Service Department for the consideration of the Naval or Air Secretary.

Releases from the Navy are obtained only in very special circumstances. Releases from the Air Force will be obtained only in similar circumstances in respect of air crews and skilled ground staff. Personnel from Overseas Units will be released only in exceptional cases, except for shearing.

Indefinite leave will not be readily granted, and short term leave will be avoided if possible in respect of A grade men—that is, Grade 1 men 20 to 41 years of age who are not enlistees for the R.N.Z.A.F. or the Royal Navy and are not held in any way under appeal. Of the Grade 1 men, single men 21 to 41 years of age will not be released except under very exceptional circumstances or prevented from entering camp.

The definition of key personnel which the Army must hold has proved a very vexed question. Actually it is difficult for the Army to define a key man satisfactorily, but the term will usually include all officers and n.c.o.'s above the rank of corporal. Men undertaking specialised work in the Army, and instructors and specialists must be classed as key men. The Army, however, has advised its units that retention of a man will not be agreed to, if the reason given for retaining him is merely that he is fully trained, or is a category A man, or that inconvenience will be caused by his release. Unit Commanders have been instructed to exercise great care in deciding whether the release of a man should be objected to on the ground of his being a key man.

They have also been instructed that they must do their best to give effect to Government policy in respect to the release of men for important work and have been enjoined to give full and conscientious consideration to the case of each man in respect of whom a recommendation has been made by the Appeal Board.

I think it is fully realised by all that this war is a war of supply, and that for the farmer to undertake his part in the grand campaign he should be as fully supplied as possible with tools and labour.

This war has shown the ineffectiveness of an army without sufficient tools of war, and it is to be hoped that it will not show the ineffectiveness of agriculture without sufficient materials and labour. It must be recognised, however, that fighting is still carried out in the main by fit men. Our women have not yet been, and I hope will not be called upon to do the actual fighting for us. They can, however, be used to a much greater extent to replace many of our workers. A start has been made in many industries in this direction. I think it can be fairly stated that agriculture has lagged behind in this respect, and it will be necessary for the farmers to employ many more women than has been the habit in the past, and a drive in this direction is necessary, both to encourage the farmers to take the services of these girls, and to encourage the girls to perform farm work.

Can Rubber Be Grown in New Zealand?

THE remarkable productivity of the rubber tree, *Hevea Brasiliensis*, under tropical plantation culture as in the East Indies, tended before the war to discourage interest in rubber-producing plants more suited to temperate climates.

Guayule

Guayule, a woody perennial shrub belonging to the family compositae had certainly been exploited to some extent in its homeland, Mexico, and had even been cultivated commercially in

By

R. E. R. GRIMMETT,
Chief Agricultural Chemist,
Wellington.

Southern California, but it is a plant of dry regions with limited adaptability. It is more likely to be successful in Australia, where experiments in growing it are already under way, than in New Zealand. Under suitable conditions it can yield nearly as much rubber per acre as *Hevea*.

Kok-Saghyz

Russian Developments.—The only extensive investigations were those made in Russia, in an endeavour to secure self-sufficiency in raw rubber. During 1931-33, expeditions collected plants from many parts of the Soviet Union, and tested them for rubber content and suitability for culture. As a result several species of dandelion (*Taraxacum*) and *Scorzonera* were selected for trial, and one of these, *Taraxacum Kok-saghyz*, a native of the Tian Shan Mountains of Kazakhstan, was found adaptable to cultivation on an extensive scale.

Information regarding Kok-saghyz and its behaviour as a farm crop has

until recently been very meagre and difficult to obtain, and not until this year have seeds been procurable from Russia. Even now the few authoritative accounts that have been published are somewhat contradictory in regard to important aspects. For example "Soils and Fertilisers" issued by the Imperial Bureau of Soil Science states "The practice of growing special plantations of Kok-saghyz for seed, and harvesting the roots of the rubber plantations at the end of the first year is rapidly being superseded by maintaining two-year plantations in which the seed is harvested after one, and rubber after two years. The rubber from second-year plants is

generally an improvement on first-year rubber in both quantity and quality."

In an article in the Australian Journal of Science, Professor A. E. V. Richardson writes: "In Russia Kok-saghyz is sown from seed in the spring (March-April) in rows 15 to 18 inches apart. The methods of cultivation followed are somewhat similar to those employed for sugar beet. It is generally harvested in the first autumn (October), but frequently left for a second year and harvested in the summer." "... average yields in the Soviet Union are said to be about 1½ tons of raw roots in the first season.



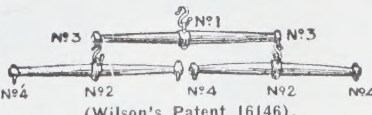
A Russian harvester of kok-saghyz seed is demonstrated by its designer.

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The rubber content of the raw root appears to be variable and to range from 2 to 4 per cent. If the crop is left for the second season the percentage of rubber in the roots increases and the yield of rubber per acre is higher."

Again, Dr. Paul Kolachov in a bulletin published by the National Farm Chemurgic Council of the U.S.A. states: "If the crop is harvested at the end of the first year, Kok-saghyz plants yield an average of 4500 to 5500 pounds of cleaned roots per acre, which equals 150 to 200 pounds of crude rubber, and 75 to 100 pounds of seed. If the crop is left for a second year, the average yield is 2700 to 3600 pounds of root and from 100 to 150 pounds of seed. In

some cases the yield at the end of the first year is as high as 7000 pounds of root, which, of course, gives an even larger amount of crude rubber. At the end of the second year, the percentage of crude rubber is higher, but the yield of the roots is less, since the plants have been thinned out by the frosts of the preceding winter, have been attacked by rodents, and the roots have been spoiled by their tendency to work up through the crevices in the soil."

In regard to processing, Richardson states that this is done by slicing and steaming the partly-dried raw material with dilute caustic soda solution added and separating the rubber by flota-

tion or centrifuging, while the Imperial Bureau writer says that it is sufficient to reduce the roots (presumably dried) to a fine powder which is macerated with water when the rubber separates out from the other matter by gravitation.

All writers are agreed, however, that the plant is highly adaptable as to soil and climate. It is cultivated from the South of Russia to the Arctic Circle, on alkaline soils, peats and podzols. On very acid soils liming is necessary. Best results are secured from rich soils, and a somewhat complicated manuring programme has been developed in the Soviet Union in order to obtain maximum yields. Good soil moisture conditions and a rainfall of over 20 inches chiefly in spring and autumn, are necessary.

As grown commercially, Kok-saghyz is at present little different from the original wild plant. It is extremely variable, and plant breeders have already made considerable progress in the task of creating a type more suitable for cultivation, with larger roots and higher rubber content.

Possibilities in N.Z.

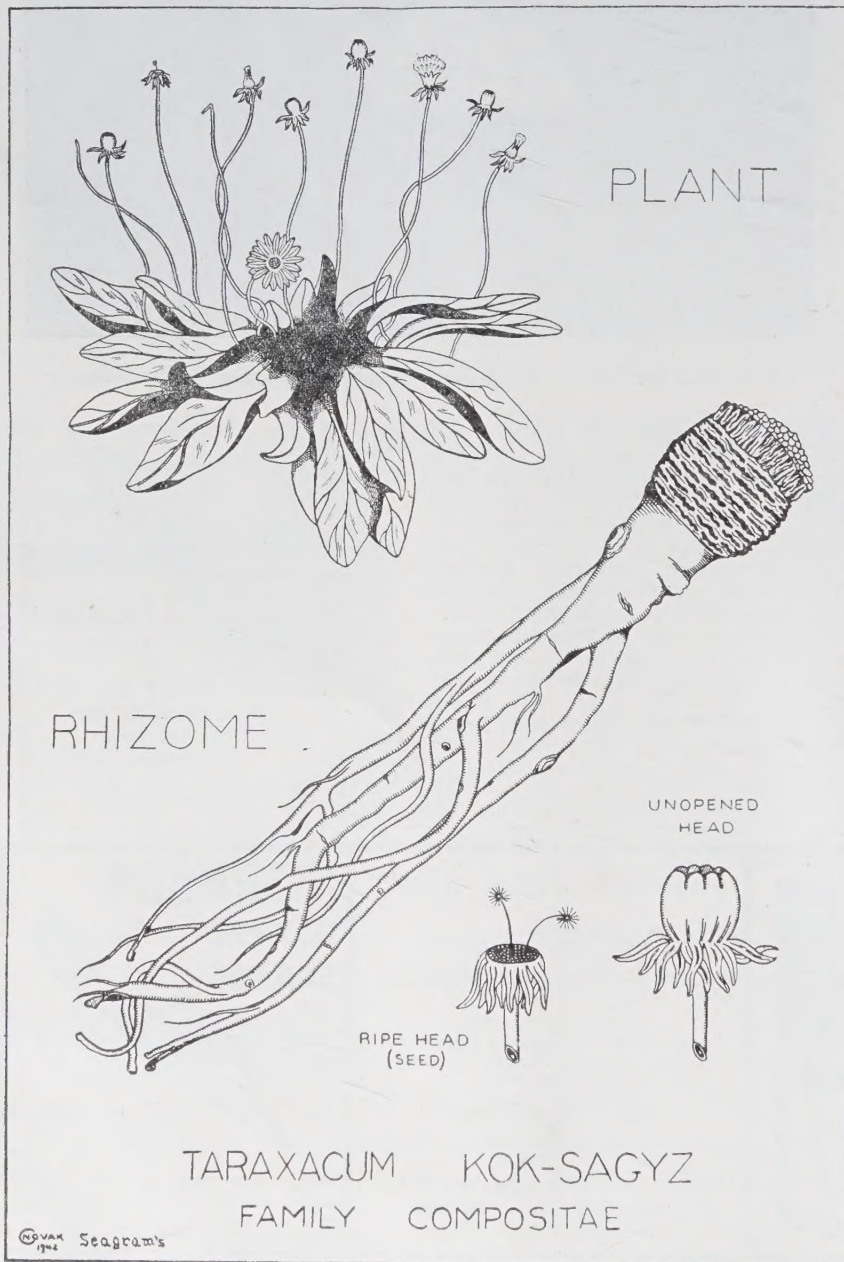
It would appear that this crop offers possibilities for cultivation within the range of our climate and soils, and is probably the only means within sight for the short-term production of rubber in New Zealand.

Every endeavour has been made to secure seed, and through the courtesy of the Australian Government sufficient for experimental purposes is expected to arrive shortly. The first consignment has now been received. Some seed has already been sown in Australia.

In the first instance plots will be established in various parts of New Zealand in order to secure data regarding environmental and cultural requirements, yield of rubber at various stages of growth, methods of processing, and production and viability of seed. If successful, seed stocks will be built up and no doubt a programme of plant breeding initiated.

This investigation is being conducted jointly by the Department of Agriculture and the Department of Scientific and Industrial Research. The botanical side is under the charge of the Botany Division, Scientific and Industrial Research, while field plots will be established by the Fields Division of the Department of Agriculture. Rubber analyses and processing trials will be carried out in the Chemical Laboratory of the latter Department if and when roots are grown.

The accompanying illustrations are from "Kok-saghyz" Family Compositae, as a Practical Source of Natural Rubber for the United States," published by the National Farm Chemurgic Council.



As a result of a serious shortage of potatoes during the last season, farmers and householders have been asked to put every available area into potatoes. The shortage was not only in eating potatoes, but in seed as well. It is unnecessary to stress the fact that, in

Cultivation of Potatoes

In addition to an increased area, an increased yield is also required, and while the weather is the limiting factor, a lot can be done by the individual that will help towards getting a better yield. There is more to it than just planting an increased area. The aim should be an increased yield as well.

THE one phase of potato growing that is apt to be neglected is the after cultivation of the crop. The potato is no exception in that if planted it will produce, but the art of potato growing is to get the maximum out of the area planted, and this can only be done by giving the plants every chance to grow. If thorough cultivation is not carried out before and after the crop has been planted,

thoroughly worked before planting. It is a mistake to get the land too fine, as otherwise it may set, and be difficult to work after the potatoes have been planted, but as a general rule it is an old turfy paddock that is being sown so that this is not likely to happen. The soil must be well worked right to the bottom of the furrow and no big clods left unbroken. There is no crop that responds better to cultivation than potatoes, so that if a successful crop is to be grown, attention in this matter will yield good results.

The year was well advanced before an announcement was made in regard to the area required to meet all the demands that would be made on the

potato crop for the coming season. This, combined with the very dry winter has placed a large number of growers in the unfortunate position of not being able to adequately prepare their additional areas to meet the situation. Those who are in this position can take heart from the fact that it is still possible for them to continue their preparation even after the area has been planted.

It takes from three weeks to a month for the potato to get through the ground, and a lot of inter-row cultivation can be done in that time, sufficient at any rate to ensure that the crop will not be a total failure. The preparation must be carried out before the young tubers begin to form,

By

C. C. LEITCH,
Instructor in Agriculture,
Timaru.

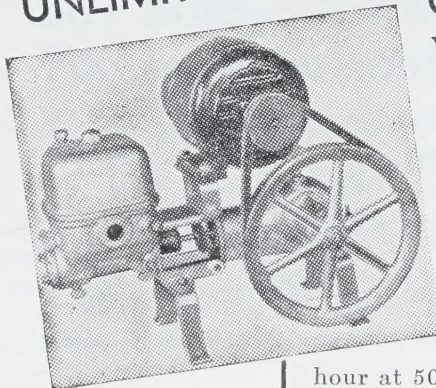
then the results will not be good, unless very favourable weather conditions are experienced. Indifferent cultivation means a reduction in yield and a crop of irregular shaped potatoes with a resultant loss on delivery.

Potatoes do best in a silty loam, but all are not fortunate enough to have this state of affairs, so that in a good many cases in South Canterbury the clay loams have to be used, and experience over the last few seasons has shown that it is possible to produce a profitable crop on the Downs. Prior to the introduction of certification this may not have been possible, due mainly to the variety used and poor quality seed, but now that we have an efficient seed certification the risk so far as poor seed is concerned has been reduced to an absolute minimum.

Preparing the Area

Normally most potato growers have the area picked out for potatoes at least nine months before planting and the ground is either skim ploughed or hustled during the summer months. In May or June it is deep ploughed, left to lie all winter, then hustled, grub harrowed, rolled if necessary, and possibly ploughed again, the endeavour being to get the ground

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so that it is very necessary for the required inter-row cultivation to be done before this takes place. The ideal is for the tubers to have good free soil in which to develop. In some soils this is easy, but as the additional area required is bringing in land that does not normally grow potatoes, the task is a little more difficult. The potato is like any other crop in that it requires a good seed bed if quick germination is to take place.

The Seed Bed

The first requirement therefore, is to ensure a good seed bed, and all efforts should be concentrated on getting the top three to four inches in this condition prior to planting. Immediately after planting the crop, commence to do the inter-row work, and endeavour

to get the depth of tilth required by this means. The implements at the disposal of the grower are many and varied, and where tractors are on hand with their various inter-row attachments, the work can be done speedily and well. Where horses are the motive power, the rows will require to be horse hoed as close to the rows as possible thus stirring up the soil to a good depth, and ensuring that when the potatoes are moulded there is sufficient soil to make a good high mould.

After this has been done, mould up the rows and leave for a week to ten days, depending on weather conditions and growth, then harrow the ridges down. Two harrowings may be necessary in order to bring the soil to a sufficient level to allow the potatoes to come through without great effort.

This harrowing serves the two fold purpose of giving extra cultivation and killing weeds. The crop can be left until the potatoes are through the ground, and then inter-row cultivated, and if weeds are likely to be troublesome, harrowed again when the potatoes are about 2in. to 3in. high. The main idea behind all these operations is to ensure that the soil is kept free, and not allow the weeds to get away.

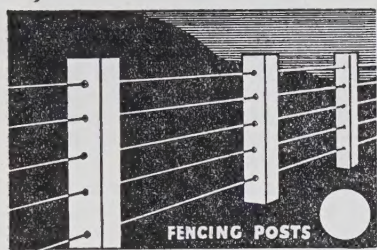
Moulding

When the potatoes begin to grow, a slight mould can be put up at each operation, and this increased each time until about a half mould is obtained. This work continues at intervals until the potatoes are ready for the final moulding.

The reason for putting up a gradual mould to about a half mould is that should the weather become wet and continue for a few days, the crop may grow at such a rate that they are touching in the rows before the ground is fit to work, when considerable damage could be done in trying to complete the mould. Further, a satisfactory mould could not be obtained under these conditions with the result that the potatoes would not be properly covered, thus causing greening. In the event of normal weather prevailing, the crop is finally moulded when the tops are beginning to touch in the rows, or when it can be seen that if left any longer they would be difficult to do without damaging the crop.

There are two schools of thought in regard to the type of final mould. One is to mould not quite to a point and the other is to bring them right to the point. Of the two, the latter has proved the best, because they gradually break down and if not brought right to a point, the potatoes are apt to become exposed, causing greening, and allowing for potato moth attack. The other point is that the mould should not be too steep. The idea is to have a fairly broad base with sides that taper gradually to a point, because if on a narrow base the soil falls back into the bottoms of the rows and leaves the tips of large potatoes exposed. It is possible for the potatoes to green with even a thin covering of soil, so the aim should be to have the potatoes well covered. If this is difficult in the early stages then it can be carried out as the crop is starting to ripen off by putting up another mould.

It will be seen from the foregoing that a fair amount of time is required in the potato area, but it is a crop that responds to treatment of this kind which does increase the yield and the quality of the potatoes.



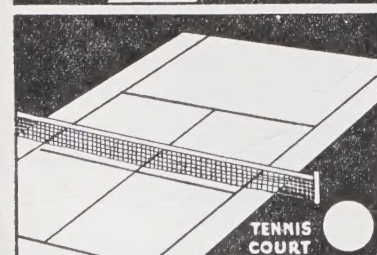
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WATER FOR STOCK

supplied, and this again is reflected in the quality and quantity of production, whether that be work, meat, wool, milk or eggs.

THE original source of water is rain, and when this reaches the earth it is pure and wholesome, free from lime and magnesium salts, and is commonly known as "soft water." When these salts are present water is referred to as "hard," and when excessively so, it is unsuitable for stock drinking purposes. The consumption of excessively "hard" waters by animals over prolonged periods may upset the digestion, as indicated by a hard staring coat and often constipation. It also predisposes to the formation of calculi concretions of mineral matter known as stones and found in the bladder or intestines. At the same time there is nothing wrong with a medium hard water; animals thrive on it. Some of the best breeding districts are those with a limestone formation where a great deal of the water is hard. Spring water and well water are usually very good for drinking if free from pollution and not hard.

Value of Water

As about 64 per cent. of the animal body consists of water, its necessity and importance as an article of diet is therefore obvious. The constant proportion of water in tissues shows that the consumption of excessive amounts of fluid does not lead to storage; adjustments are readily effected and the excess of fluid rapidly got rid of. The requirements of an animal for water are therefore constant, though to some extent varying with the season of the year, and the nature of the food supply.

Water dissolves food materials and helps to reduce them to a state for ready absorption from the intestinal tract. Without sufficient water neither rumination, that is "chewing the cud," nor intestinal digestion in any of the herbivorous animals can go on; therefore the contents of the first stomach in cattle and sheep and the large bowel of the horse must be kept fluid.

The water in the blood plays an important part in the conveyance of nourishment and the removal of waste materials. The blood therefore must be kept fluid and concentrations avoided.

By

C. V. DAYUS, M.R.C.V.S.,
District Superintendent,
Livestock Division, Dunedin.

Watering Animals

Innumerable opinions have been expressed regarding watering stabled animals, as to whether watering should take place before or after feeding. It is commonly believed that drinking after eating tends to wash the food out of the stomach and so decrease the amount digested, and therefore animals, especially horses, should be watered before being fed.

The established custom in the Army, and one that is general outside the Army, is to water before feeding.

However, there is very little disturbance, or dilution, of the stomach contents in watering after feeding, and the most logical answer to the problem is to allow the animals inclination to decide as to whether it drinks before, during, or after feeding. A more important point to bear in mind is that in watering and feeding any sudden change in a system that has been accustomed to, may lead to digestive disturbance. The safest method of watering animals is to allow them to have water regularly, and let them drink as much as they desire. A working horse, especially if tired and hot, will naturally swallow an inordinate quantity of water very

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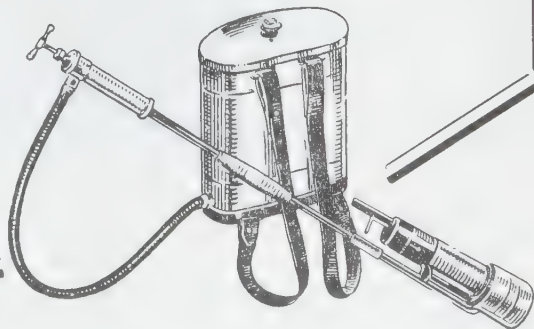
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rapidly, and it is only common-sense to allow him the opportunity of quenching his thirst before giving him dry food.

The quantity of water needed per day by the various domestic animals

naturally depends upon the nature of the food they receive, the climate and the size and the activity of the animals themselves. When dry food is given more water is required than when roots or growing grass is eaten.

Horses

Horses require about 6-8 gallons of water per day under ordinary conditions. To get this they should be watered as often as possible and allow-

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ed to get what they need. In the case of stabled horses they must be allowed plenty of time to drink and not be led away the first time they raise their heads from the water. Even those who practise the "water before feeding" principle do not hold that to mean no water until the next meal. A horse returning home tired and thirsty will not eat his food well until he has had a drink, but after eating a lot of dry feed he often feels thirsty and it is reasonable that he should be allowed a drink if he wants one.

The approximate quantity of 6-8 gallons will be less when the horse is at grass, but more will be required when the weather is very hot, when the horse perspires greatly, when the food is exceptionally dry, and in the case of the pregnant and the suckling mare.

Cattle

All cattle must have access to water; it is indispensable for milk production due to the fact that it forms 87 per cent. of the animal's milk yield. Often the production of good cows is lessened merely because they cannot conveniently get plenty of fresh, pure water.

The amount of water cows drink depends on the external temperature, the yield of milk and the nature of the feed. It is probable that a cow requires between 3 to 4 gallons of water for each gallon of milk produced, and more may be consumed in herds where it is customary to provide salt licks. Cows in milk therefore require 12 to 15 gallons per day and high producing animals even more.

All fattening cattle should be allowed as much water to drink as they need; on roots of course they will consume less on account of the high water content in the roots, but nevertheless, it is an advantage even then for water to be available.

Calves require much more water after they are weaned than before; if the supply is insufficient when the milk is being cut down, they may receive a check in growth which may never be made up.

Sheep

Opinions as to the amount of water necessary for sheep vary more than is the case with any other domestic ani-

mal. On ample succulent feed and when roots are largely used, water may be denied sheep. Generally, however, an adequate water supply is just as important in sheepfarming. A sheep requires 1-6 quarts of water daily according to the class of feed, temperature, and weather. Ewes suckling lambs and sheep being fattened require more water than those carried through the winter. Drinking from stagnant pools and swamp areas, wherever practicable, must be prevented because of the increased risk of infestation with internal parasites.

Pigs

Water is just as essential for the pig as for any other domestic animal, but in New Zealand more than the fluid requirement is usually provided in the dairy by-products so commonly used.

Without a sufficiency of fluid, animals are unable to make good the loss of water that occurs through the secretion of milk, saliva and the digestive juices or the excretions of the skin and kidneys, and consequently they become unable to exercise their maximum power of production, whether of flesh, milk, wool or work.

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..... J.A. 15/12/42

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(2) Mr. J. F. SANDALL, Fairlie, writes:
"We swept in over 100 tons of linen flax, both to the stacks and to trailers carting it away. We swept all our wheat, with the exception of some Hunters, and the operation was an entire success, being a saving in labour of at least four men. All this work was done on downy country. I really don't know how we would have got through the last harvest without this implement."

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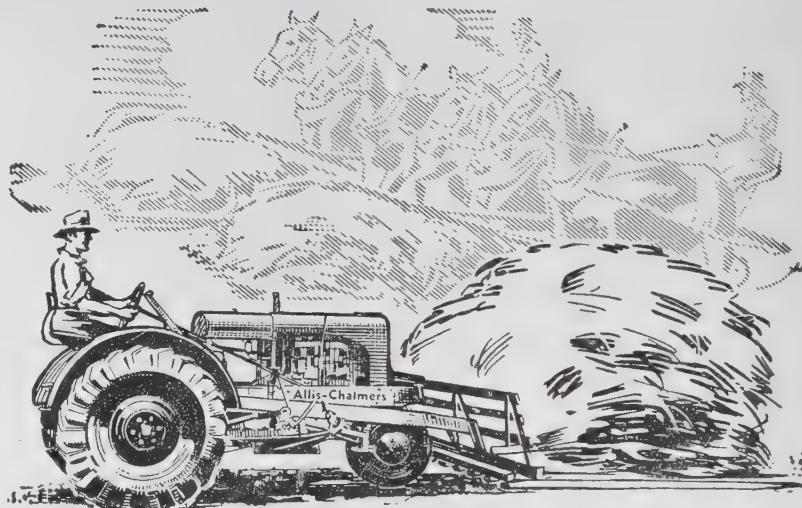
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.....J.A.4

The Southland farmer has had a good deal of experience with the linen flax crop during the past two years, and as far as the actual growing of the crop is concerned excellent results have been obtained. Unfortunately, as regards the handling of the crop from the

Handling of the Linen Flax Crop

stook to the stack, the reverse holds. As probably no crop can deteriorate and decrease in value as rapidly as linen flax during the period from stook to stack, it will be realised that a few remarks on this subject may be timely.

IN a standing crop the machine employed in pulling flax does not make as good a sheaf as would the reaper and binder, but in a partly-lodged crop the pulling machine makes a superior sheaf although it will be realised this is far from perfect. Where a crop has been badly lodged over a period, and is tangled and may be rotted as well, the resulting sheaf is practically useless as far as processing at

— By —

A. STUART,
Instructor in Agriculture,
Invercargill.

the factory is concerned. It is probable that standing crops of sufficient length will be cut with the binder during the coming season due to a possible shortage of the rubber belts required by the pulling machines. Crops cut in this way would normally be of a fibre length of 25 inches or more.

Reverting to the use of the pulling machine in a standing crop of flax, any major improvements to the machine are unlikely for the duration of the war due to the shortage of material and labour, and to the fact that the machines in good hands are efficient. Minor improvements are being made yearly, but that perfect sheaf which can be obtained by hand-pulling is still a long way off.

The Sheaf

It is at this point that the farmer can do a lot to attain the ideal sheaf, which, by the way, should not be too big nor too small. The size of sheaf can be regulated on the machine and the band of the sheaf should not be tied tightly, this again being adjusted by the tension on the knotter. Two or more men should follow the machine to straighten up each sheaf as it falls to the ground. Sheaves are inclined to fan out at the butt and the head, while in



A New Zealand made flax-pulling machine in action. Linen flax is not cut, but pulled up by the roots, so that none of the fibre of the stem is wasted.

addition the head may cling to the following sheaf at the knotter until four or five sheaves are connected together. When this happens each succeeding sheaf becomes smaller until the collective weight is sufficient to clear the machine at the knotter and all sheaves then fall to the ground. The sheaf, straightened and separated if necessary, should be laid down in the paddock for an interval of approxi-

mately 12 to 24 hours, during which period it will stiffen and be much more readily stooked, which is the next operation.

Stooking

Stooks should be placed in a north and south direction and should not contain more than 10 sheaves. It will be found that a more workmanlike and

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satisfactory stook is made if the knot of the binder twine is turned in in the stook as is done in the case of wheat. Depending mainly on the weather, the crop should remain in stook 10 to 20 days. It is found that the straw dries rapidly, but that the seed bolls dry slowly, and consequently the time for stacking should be judged on these alone. After heavy rain, flax is often ready again for stacking within 24 hours, when oats would take twice as long.

All growers are advised to turn the sheaves while in the stook if this is at all possible. This should be carried out 5 to 8 days after the stooking. This operation results in the straightening of the sheaf, as sheaves otherwise become dished, and are not only difficult to handle in stacking but later cause waste and difficulty all through

the processing operations at the factory.

Actually, if the farmer stacks the material well, the weight in the stack results to some extent in straightening the sheaf, which ultimately delivers much better to the factory. However, when the farmer intends to deliver from the stook, this turning of the sheaves in stook is almost imperative to secure a reasonable delivery bonus.

Stacking

It will be realised that not more than one-tenth of the factory area grown is likely to be delivered out of stook, and accordingly the great bulk of the area accepted will be stacked on the farm. If the crop is left too long in stook weathering takes place, commencing at the butt end, which is in contact with the ground, and this

reduces the effective fibre length at the factory. In extreme cases weathering will commence also at the head, accompanied by loss of seed. If this is allowed to happen, practically all the sheaf becomes black and discoloured, and the material is practically useless as far as fibre is concerned.

In stacking, good stack bottoms are essential, as linen flax when placed flat on the ground is to some extent similar to blotting paper and can absorb water to the extent of 200 per cent. of its original dry weight. In fact the humidity of the air has a big influence on the weight of a linen flax stack at any time.

While there may be arguments in connection with the size and shape of stacks, the oblong stack is generally favoured as it presents less surface for weathering. Generally speaking,



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Left.—A linen flax crop pulled and stooked.

Below.—A linen flax crop in stack and awaiting processing into fibre.



stacks 30 feet by 12 feet ground measurement are favoured. The stacks can be well sprung (up to 4 feet) at the eaves, and then well headed.

Care is necessary in leading-in linen flax, as rough handling results in loose and damaged straw unfit for processing. The use of sweeps is not recommended, as the fibre in the butts of sheaves dragged on the ground becomes frayed out and useless. Where tractor or horse sweeps have the load actually built on their teeth they could be improvised in carting operations to replace drays. Unless the sheaves are forked on singly the use of the elevator should not be encouraged in stacking, as it is imperative that the stacker should handle each sheaf on the stack.

Thatching

For safety the stacks should be thatched. Rushes or toe-toe make excellent material for thatch, and are available on many farms. Rye-corn straw can be used for this purpose, and often oat straw, or preferably wheat straw, may be used if such crops are not header harvested. A commendable practice that is extending is not to head the stacks with the

linen flax crop, but to head with any wheat or oat straw available.

Actually linen flax straw itself makes good thatch, but where other material is available this straw is too valuable to be used. When stacks are not thatched, but are properly headed, these stacks are waterproof after settling has finished, but the outside sheaves become weathered to a depth of 2 to 3 inches. It is these sheaves which become mixed through the whole crop when carted and cause the resultant poor discoloured fibre to appear throughout a line when

scutched. Unless this material is removed by hand off the scutcher the fibre may be devalued by as much as £50 per ton. In the same way material badly weathered in the stook can cause the same trouble and result in low value fibre. In extreme cases little or no fibre is obtained, only tow being produced.

When it is realised by the farmer that his average payment is £7 per ton at the weighbridge, and that on the average it takes 20 tons of linen flax straw to produce one ton of fibre, he will appreciate the necessity of

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Aim to Reduce Tow

It is most disappointing to find after a good fibre crop has been produced that the result is tow. Only the best fibre produced can be used for its main purpose, which is, first and foremost, for aeroplane wing fabric. Remember that good quality straw can be turned easily into low quality fibre, and every operation that tends to increase the proportion of tow does so at the expense of the quantity of line fibre produced. Tow is worth approximately one-third of the value of line fibre, and in addition costs more to produce, as it has to receive further treatment and has to be hand scutched. When straw becomes discoloured the resultant fibre is graded as barré flax, which reduces its value by approximately half.

Linen flax fibre is a vital war necessity, as is emphasised by the fact that this commodity obtains priority of all shipping space. Farmers, make it your aim to reduce tow and discoloured straw in your handling of this crop.

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J.A. 15/12/42

LAMB CASTRATION and DOCKING

DURING the past few years, there has been a marked tendency amongst fat-lamb breeders in Canterbury to discard the use of the knife for castration in favour of a bloodless emasculator. At the same time, there has been an increased use of a searing iron for docking. It is difficult to explain completely why this change is occurring. It is generally maintained by those in favour of these methods that the lamb receives less check because blood loss is avoided, bacterial contamination is greatly reduced and thus the incidence of arthritis is likely to be minimised. No doubt a part is played by persistent and widespread advertisements in farming papers by firms marketing bloodless castrating instruments. On the other hand, it is maintained by farmers who still use the knife that there are always lambs incompletely castrated when an emasculator is used and that the whole operation is appreciably slowed.

It is clear that, apart from the occasional property where arthritis may be a superimposed problem, the important thing to determine is what effect the various methods of castration and docking have upon the rate of weight gain of lambs. From this point of view, there is little evidence to support the use of either an emasculator or a hot iron for tailing. Certainly Fraser (1933), using a small number of lambs, reported a 10 per cent. increase in weight at weaning in lambs castrated bloodlessly. But this result appears never to have been repeated. Shier and Devonport (1936) using the progeny of 499 Border Leicester/Merino ewes x Southdown rams obtained no significant difference between the two methods. Garner and Sanders (1936) were also unable to show any improved rate of weight gain in lambs castrated by an emasculator. The effects of docking by the use of the searing iron were studied by these last workers and by Filmer (1938). All

—By—
**T. K. EWER, Veterinary
Research Officer,
Christchurch.**

found no greater weight gains in group docked by the searing iron. Further, Filmer observed slower healing in lambs docked by this method.

Two experiments are reported here. They were conducted at the Kirwee Experimental Farm in the Canterbury fat-lamb raising area in 1940 and 1941.

Trial 1, 1940

In this trial 360 Corriedale lambs were used. They came in approximately equal numbers from five groups of ewes which had been utilised during the preceding months in a

winter feeding experiment. The ewes had been mated as one mob, so there was no age difference in the lambs from each ewe group. Marking was carried out when most of the lambs were three weeks' old.

The experiment was designed to compare the effects of castrating with a bloodless emasculator and with the knife, and of detailing by the hot iron and the knife upon the rate of weight gain. Both ram and ewe lambs in each group were randomised separately into two sub-groups on a weight basis.

The methods of castration and tailing and the mean weights of these sub-groups are set out in tables 1 and 2. The lambs were weighted three weeks after marking and subsequently every month until weaning. There were seven deaths from blackleg within five days of marking, all of them being ram lambs. The organism responsible in each case was *Cl. chauvoei* and the focus of infection appeared to be the scrotum. Three of the dead lambs had been castrated by the emasculator.

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Any effect directly due to bleeding should be observed within three weeks after marking, while the total effect on the lamb carcass should be fairly well reflected in the live weight at weaning. Consequently in the following tables, the mean live weight for each group is given at marking, (3/10/40) three weeks later (25/10/40) and at weaning (13/1/41).

These results were subjected to statistical analysis and the 'chi square' test gave highly significant results for both ram lambs and ewe lambs.

Blowfly strike in Canterbury does not occur before December, but, in view of the high proportion of infected tail wounds amongst lambs docked by the hot iron, it is reasonable to assume that in places where blowflies are

searing iron, all lambs in 1941 were detailed by the knife.

For the castration experiment, 206 Corriedale ram lambs were used. They were the male progeny of seven groups of ewes which, during the winter and until "marking" time had been given different feed treatments.

"Marking" was done on September 26 when the lambs were approximately three weeks old. This took place in temporary yards erected in the same paddocks as each ewe group had occupied during the winter feeding period and subsequent lambing.

On the same day as the lambs were "marked," they were weighed and the ram lambs in each group randomised into two equal groups on a weight basis.

From "marking" until weaning, these groups were run together on saved clover except for group 2 which was

TABLE 1.—Ram Lambs: Mean Weight in Lbs.

Group.	Treatment.	No. of Group.	3/10/40.	25/10/40	Mean Inc. & S.E.	13/1/41	Mean Inc. & S.E.
1	A T=SI C=K	15	24.3	37.9	13.6±0.4	71.7	47.4±1.0
	B T=SI C=E	19	25.5	39.0	13.5±0.7	70.5	45.0±2.1
2	A T=K C=E	17	22.9	34.7	11.8±0.5	56.8	33.9±1.3
	B T=K C=K	18	22.8	34.6	11.8±0.4	58.6	35.8±1.8
3	A T=K C=K	15	22.9	36.4	13.5±0.4	65.9	43.0±1.8
	B T=SI C=K	15	23.2	36.5	13.3±0.6	68.2	45.0±1.7
4	A T=K C=E	18	21.6	34.1	12.5±0.4	59.2	37.6±1.2
	B T=SI C=E	21	21.8	35.3	13.5±0.5	61.6	39.8±1.4
5	A T=K C=K	17	22.5	34.8	12.3±0.5	64.2	41.7±1.4
	B T=SI C=K	20	23.2	35.6	12.4±0.6	64.4	41.2±1.5

T=Tailing. C=Castration. E=Emasculator. SI=Searing Iron. K=Knife.

TABLE II.—Ewe Lambs: Mean Weight in Lbs.

Group.	Treatment.	No. of Group.	3/10/40.	25/10/40	Mean Inc. & S.E.	13/1/41	Mean Inc. & S.E.
1	A T=K	19	23.2	36.0	12.8±0.3	64.5	41.3±1.1
	B T=SI	16	22.8	35.4	12.6±0.6	64.6	41.8±2.0
2	A T=K	18	21.1	33.4	12.3±0.8	55.4	34.3±2.0
	B T=SI	19	21.8	32.3	10.5±0.7	51.7	29.9±1.8
3	A T=K	19	20.9	33.7	12.8±0.7	63.4	42.5±1.5
	B T=SI	19	21.5	34.3	12.8±0.4	61.9	40.4±1.5
4	A T=K	19	20.3	32.0	11.7±0.5	57.4	37.1±1.4
	B T=SI	17	20.6	32.8	12.2±0.5	54.8	34.2±1.5
5	A T=K	19	20.4	33.7	12.3±0.5	62.7	42.3±1.4
	B T=SI	20	21.0	33.3	12.3±0.5	62.5	41.5±2.0

T=Tailing. K=Knife. SI=Searing Iron.

Though small differences are observable in some cases, these do not consistently favour any particular method. When the "t" test was applied, it was found that the difference in weight increases was not significant in any case.

When the wounds from docking were examined three weeks after the operation, a marked difference in healing was seen.

Table 111 summarises the incidence of healing, and it is at once clear that the use of a hot iron greatly delays healing of docking wounds, for whereas 78 per cent. of lambs of both sexes docked by the knife had healed wounds, only 23 per cent. were healed of those docked by the searing iron.

A further examination of the worst cases a month later showed them all healed.

active earlier, there is danger of strikes occurring amongst such lambs.

The result of this season's investigation can be summarised by saying that if rate of weight gain from "marking" to weaning be accepted as the criterion, on properties where arthritis does not normally occur, there is no difference between lambs castrated by the bloodless instrument and by the knife nor between lambs docked by searing iron and by the knife.

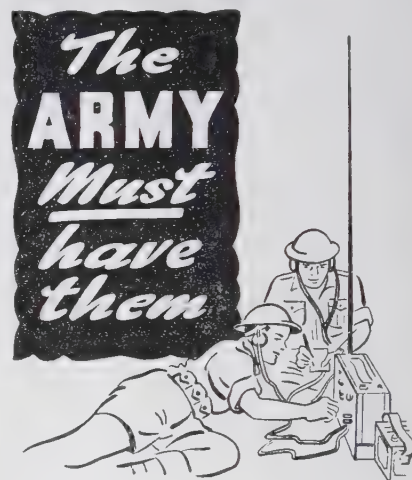
Trial 2, 1941

Although the bloodless emasculator had shown no superiority over the "knife," it was considered desirable during the 1941 lambing season to test them again. In view of the slow rate of healing following docking by the

TABLE III.

	Number.	RAMS.					Number.	EWES.			
		H.	S.	S+	Sp.			H.	S.	S+	Sp.
Knife ..	84	74%	23%	2%	1%		94	81%	16%	—	3%
Searing Iron ..	90	19%	57%	8%	17%		93	26%	50%	8%	16%

H=Healed. S=Scab. S+ = Extensive scab very little healing. Sp.=Scab with pus underneath.



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kept on green feed till a fortnight after "marking" and group 6, which was given a protein supplement from December 4 until weaning.

Within a week of "marking" ten lambs died from blackleg due to *Cl. chauvoei* infection. They were all wether lambs, and an equal number were lost from each castration group. In all cases examined, the scrotum appeared to be the focus of infection.

All lambs were weighed a fortnight later and subsequently at monthly intervals until weaning on January 12. On December 4 a fat lamb buyer went through the lambs and picked out 56 as in prime condition. For the purposes of this investigation the weighing on that date is taken as the terminal one.

Table IV. shows the mean weights in a manner similar to those of the 1940 experiment.

Conclusion

The results of one season's trial with the searing iron and knife methods of docking, and of two season's trial with the bloodless emasculator and knife methods of castration show that in no case was there any subsequent differ-

Group.	Treatment.	No. in Group.	26/9/41.	9/10/41	Mean Inc. & S.E.	4/12/41	Mean Inc. & S.E.
1	A C=E	13	23.5	31.1	7.6±0.8	62.2	28.7±1.6
	B C=K	15	24.7	30.5	5.8±0.6	60.4	35.7±1.1
2	A C=E	19	24.2	31.3	7.1±0.5	60.0	35.8±1.6
	B C=K	18	25.1	32.1	7.0±0.5	60.8	35.7±1.7
3	A C=E	14	19.8	27.3	7.5±0.6	57.4	37.6±1.6
	B C=K	13	20.9	27.4	6.5±0.7	57.2	36.3±1.7
4	A C=E	17	25.7	33.0	7.3±0.7	65.2	39.5±0.8
	B C=K	16	25.0	32.9	7.9±1.1	62.8	37.8±1.5
5	A C=E	9	21.6	27.7	6.1±0.7	56.0	34.4±2.3
	B C=K	10	20.2	27.1	6.9±0.6	54.7	34.5±2.7
6	A C=E	14	21.6	29.5	7.9±0.7	58.9	37.3±1.7
	B C=K	12	21.3	28.6	7.3±0.9	59.9	38.6±1.7
7	A C=E	18	22.5	29.2	6.7±0.4	58.7	36.2±1.7
	B C=K	18	22.4	28.7	6.3±0.5	57.3	34.9±1.7

C=Castration. E=Emasculator. K=Knife.

As before all comparisons tested "not significant."

ence in either growth rate or mortality.

Acknowledgments

The encouragement and help of Dr. J. F. Filmer, Director, Animal Research Division, throughout, and the assistance with the statistical work of Mr. W. N. Paton, Senior Investigational

Officer are gratefully acknowledged.

References.—Filmer, J. F. (1938), Aust. Vet. J. 14: 189; Frazer, A. H. H. (1933); Scot. J.A.g. 16: 86; Garner, F. H. and Sanders, H. G. (1936), J.A.g.Sci. 26: 296; Shier, F. L. and Davenport, N. (1936)—J.A.g.W.A. 13: 260.



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LITTER PRODUCTION

IN any discussion dealing with dairy-farming, pigs must play an important part, because of their ability to utilise the by-products of the dairy industry.

Skim-milk, whey and buttermilk are recognised as waste products and can be given a value only when fed to pigs. This value is determined largely by the price of pig-meat and the cost of supplementary feed. The records of many feed trials show that dairy by-products have a value of from 1½d to 3d per lb. butterfat.

At the present time about 1,400,000 cows in New Zealand are milked for the production of butter and cheese. The by-product (the basic food for pigs) produces about 100,000,000 lb. of

Better housing, sanitation and facilities for looking after pigs are among the first improvements that are associated with profits. Good management of the sow and her litter is important—attention at the right time is vital. This article is the first of a series that will cover all phases of pig management.

methods of management, feeding and housing are the factors chiefly responsible for low returns.

Important Factors

The following are points to which attention should be directed:—

Getting pigs used to a changed diet, and living conditions providing the necessary conveniences such as proper receptacles for skim-milk or whey, troughs that are big enough, and sufficient of them.

Facilities for feeding to avoid climbing fences, and a place for stor-

ing feed other than dairy by-products.

Feeding not only the quality but the quantity feeds. Pigs will do well, up to a point, on poor quality feed provided they get sufficient of it.

Regularity of feeding three times daily (five in the case of whey) is also of importance.

Pigs should be fed according to their weight. A pig of 40lb. live weight will require 2lb. of feed daily, while one of 100lb. will require 4½lb. daily. A pig approaching bacon weight of 200lb. will require 7lb. of feed.

Quality of carcass is affected just as much by over-feeding as in under-feeding, but in a different way. Pigs under-fed become costly because of the time taken to reach marketable weights. Over-fed pigs are quite often graded down for being too fat. The happy medium is not hard to attain when a systematic policy of feeding is followed.

Good Litters

When a sow produces a good litter, the owner, unless he is an expert and knows exactly why the litter is so excellent, usually gets as much kick out of the event as if he had collected on the last sweepstake. He takes a reasonable pride in the event and tells

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pig-meat, or 70lb. of pig-meat per cow. At ruling price—6½d per lb.—it shows a return of £1 16s per cow. Taking the average butterfat production per cow at 240lb., pig-meat adds about 2d a lb. to the price of butterfat.

These two industries—cows and pigs—are so closely associated as to be inseparable. Approximately 90 per cent. of the production from cows is a waste product, which, when intelligently used as a pig-feed can increase the returns of the farmer by 3d per lb. butterfat in the case of skim-milk, and 1½d per lb. in the case of whey. This fact needs to be emphasised, and while objection to such a statement may be raised by some it has been accomplished by many who have given consideration to the pig side of dairy-farming. Conditions of management associated with such a return are in most cases better than the average. Slack

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his friends, but perhaps he also wonders just how it happened to be so good. Even the experts are perhaps a little surprised sometimes at the excellence of their results, because they can recollect numerous incidents that were likely to do harm to the sow while she was in pig. Although on the whole the exercise of care at the right time and the intelligent use of the best information is likely to give good results, still, there is no royal road to success in producing good litters. If there were, these would be a commonplace, but instead of that, poor litters, with their resultant loss and disappointment, make pigs still unprofitable on many farms.

A good litter should weigh between 300lb. and 400lb. at eight weeks old, the greater the number of piglets the better. Thus 10 piglets of 30lb. each is a better litter than 6 piglets of 50lb. each. A spring balance is a valuable adjunct in assessing litter value. The production of good litters begins with the shedding of the eggs from the ovaries of the sow during the heat period. It is usually considered that a sow in good condition for breeding will shed 20 to 30 ova over a period of 30 to 36 hours from the first onset of heat. The actual onset of heat and the number of eggs produced during oestrus, are determined, in the sow, as in every other animal, by the amount of improvement that is taking place in the animal at that time. This improvement is commonly spoken of as "flushing." In the sow this flushing automatically takes place immediately after weaning, and is due to the re-absorption of milk from the udder back into the sow's body. It is probably because of this automatic flushing that oestrus occurs so regularly within three to six days of weaning. It is also true that where the first heat period is missed and difficulty is subsequently experienced in getting a sow in pig, this difficulty is because of the absence of flushing.

Treatment at Weaning

Many owners turn the sow out on a bare paddock at weaning and reduce her feed supply, and even let her back to the litter once a day so as to dry her off. If the sow is in high condition this may be all right, but if the sow is in low condition such treatment may result in delayed oestrus or the shedding of few eggs, and a small litter following. Where sows fail to come on heat after weaning, they should be shut up and fed heavily for a week before the next heat period is due. On the other hand where maiden sows are in such high condition that they are incapable of rapid improvement at the onset of oestrus, small litters often result, and this can be prevented by keeping the sow always in good condition but somewhere below the peak of her form.

Time of Service

It was mentioned that 20 to 30 ova may be shed over a period of 30 to 36 hours from the time the sow first comes on heat. These eggs are shed one at a time, and if service takes place when only a few eggs are shed, then only a few will be fertilised and a small litter will result. The sperm of the male remains active on the uterus for about 8 to 10 hours, so that if service takes place at 24 hours after heat begins all eggs shed up to 32 to 34 hours may be fertilised. If these points are appreciated the sow will be served ideally, that is, with every prospect of a big litter, about 24 to 36 hours after she comes on heat.

In practice the best thing is to give one service when the sow is well on heat, and a second one as late as the sow will stand service.

Gestation

If the owner has attended to these points he has laid the foundation for a big litter, and provided the sow is reasonably treated for the next four months he should not be disappointed. Experimental work at Cambridge University some years ago on in-pig sows showed that a few days after service a sow's uterus showed the implantation of 20 fertilised living embryo with a corresponding number of "*corpora lutea*" in the ovaries. A month after service there were again found the implantations of 20 fertilised embryo, and corresponding *corpora lutea*, but only 16 to 18 of the embryo were alive. Two months after service the evidence of 20 implantations was found, but only 14-16 of the embryo were alive. Two months after service only 10 to 12 foetuses were found, and at four months ten to twelve pigs were farrowed. In all about 50 sows were slaughtered in collecting this information, and at the different killing stages it was found that on the average the same number of eggs were fertilised per sow, but that as the months went by the number surviving became less and less till only half the number fertilised were born alive. At birth, while an average of ten live pigs were produced, some sows produced dead pigs, some weakly ones that died after birth, and some, of course, produced litters of even-sized pig.

Foetal Mortality

The explanation of the observed happenings appears to be that a sow sets out to produce a maximum number of offspring, but finds as time goes on that she cannot maintain her original intention, and by restricting the blood supply to any foetus, stops its development. Once the blood supply is cut off the foetus ceases to live, and if time permits, it is absorbed back into the maternal system. If the blood stream has been cut off late in the gestation period the little one may be born dead, absorption having been im-



possible in a short time. If the blood supply has only been restricted the pig may be undeveloped, weakly, or undersized, and may survive to be the runt of the litter.



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SHEATH ROT IN SHEEP

A Practical Method of Treating By Fasting

For the information of sheep-farmers in New Zealand, Information Circular No. 11 which has just been received from the Division of Animal Health and Nutrition, Council for Scientific and Industrial Research, Australia, is reprinted hereunder.

"Although the method outlined in the Circular has not been tested in New Zealand, it has the great merit of simplicity and it is suggested that farmers who are troubled with sheath rot in their sheep should test the fasting method. The Department of Agriculture would be glad to hear of any results obtained, and it is suggested that farmers who are contemplating carrying out a test should inform their nearest Veterinarian or Inspector of Stock, so that he may be able to inspect the experimental sheep before and after treatment."

THIS article embodies the results of a very recent experiment under practical conditions, using fasting as a means of treatment for all kinds of sheath rot.

Background of Experiment

Cases of sheath rot which had periodically been sent to the McMaster Laboratory in Sydney cleared up almost without exception within ten days. Factors possibly responsible for this were a change of environment, change of feed and absence of food during transit as well as loss of appetite a few days after arrival.

In August 1941, an experiment designed to measure the effect of the environmental factor was conducted at Boatmen in south-western Queensland. In this, an attempt was made to reproduce the same conditions experienced by wethers transferred to the Laboratory. Cases of balanitis were subjected to four days almost complete fast, then followed a limited ration of oaten hay for a further eight days while being left in a shed and allowed unlimited bore water. Oaten hay was selected as a diet which would maintain an acid urine already produced by a four days' fast. Recoveries under these conditions were spectacular.

The question then arose as to whether similar results could be obtained under paddock conditions, by very restricted grazing with almost complete absence of feed and free access to a bore drain. Information was also desired as to what effect this treatment would have on the general condition of the sheep.

Details of Experiment

At Wheatlea in south-western Queensland, it was possible to obtain

92 cases of sheath rot. Unfortunately, owing to the difficulty of transport at this time, the cases were not seen prior to the treatment, but the manager gave an assurance that he had selected the cases very carefully. This assurance was confirmed when the sheep were subsequently examined, as it is always possible to detect cases in

which the sheath has recently been affected internally. It can be safely assumed that over 80 per cent. of the cases were severely affected with internal lesions of the sheath at the commencement of the experiment.

Procedure

For the first ten days, the wethers were kept in a small holding paddock with plenty of water but with practically no feed. For the next nine days the wethers were allowed out and shepherded for an hour each day, then returned to the paddock. Five sheep escaped from the group during the experiment but none died.

Results

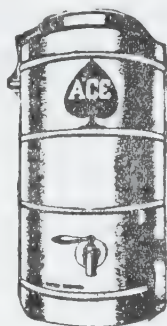
On September 29, 87 wethers subjected to the treatment described were very carefully examined, and classified into the following categories:

- (a) Wether showing **complete** absence of sheath lesions, both internal and external—i.e., complete recovery 62
- (b) Wethers showing complete absence of internal lesions but still showing slight external lesions 7
- (c) Wethers still affected to a minor degree with internal



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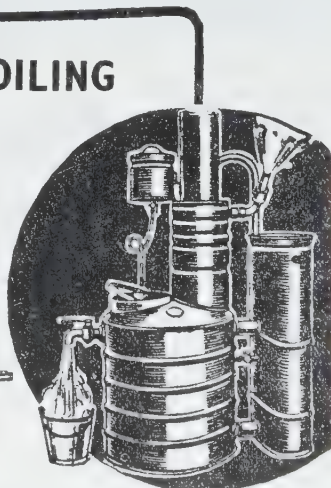
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lesions. A small amount of fluid contaminated with pus could be obtained on pressure. The preputial opening was not blocked. Judging from the previous observations at Boatmen complete recovery in these cases could have been expected within a few more days 11

(d) Wethers affected to some degree with internal lesions. Pus was still present in considerable amounts but palpation revealed that the area involved has been considerably reduced, i.e., that there had been some improvement. The preputial opening in some of these cases was blocked by a plug of pus 3

(e) Wethers in which no improvement could be detected, and in which blockage from pus and external scabs were still present 4

Discussion

An almost complete fast, for a period of 19 days during which the wethers had free access to bore water, had a remarkable effect in clearing up cases of sheath rot. In 69 of 87 cases, the internal lesions had completely cleared up, and the cases were regarded as completely cured. A further 11 cases would probably have cleared up after a few days' further treatment. Only four cases showed no signs of improve-

ment. It is probable from investigations at Boatmen that, in spite of the fast, the urine in these four wethers remained alkaline throughout.

It is considered that the effect of the treatment on the general condition of the sheep was not severe. They certainly lost weight and appeared very hollow. The fast for practically three weeks caused no deaths and, with the exception of a small percentage which were very poor in condition due to the effects of sheath rot, a large percentage were expected to fatten readily when given suitable feed. The question of relapse should be considered further, but from past experience in this district, it is believed that these wethers will not redevelop the trouble until feed conditions are "right" for development of sheath rot, probably in March next year if good summer rains are experienced.

The results of the experiment are of great practical importance. They reveal a very simple method of treatment available to the majority of graziers and one which saves labour. It is suggested, however, that the fasting period should be limited to three weeks, and at the end of this period, those cases with blockage, or with a large quantity of pus in the sheath (in this instance 8 per cent.) should be treated surgically.

The method of food restriction may be varied somewhat, but the principle

of the treatment is that very much restricted grazing with unlimited water should be allowed to wethers affected with all types of sheath rot for a period of three weeks.

Hydatid Disease

Hydatid disease in man and animals can be controlled in New Zealand if reasonable care is taken by all owners of dogs and a general attempt is made by farmers. Although the disease is present in our domestic animals, especially sheep, cattle and pigs, seldom do deaths result from its presence. On this account farmers often treat the matter lightly. In the human subject, on the other hand, hydatid disease is, owing to its nature, often a most grave problem, requiring prolonged attention in hospitals and often serious operations.

In any country where sheep, cattle and dogs are numerous, and where dogs come into contact with human beings, the risk of hydatid disease in the latter is greatly increased.

All farmers and owners of dogs should write to the Department of Agriculture for a free copy of Bulletin 147, Prevention of Hydatid Disease in Man and Animals.

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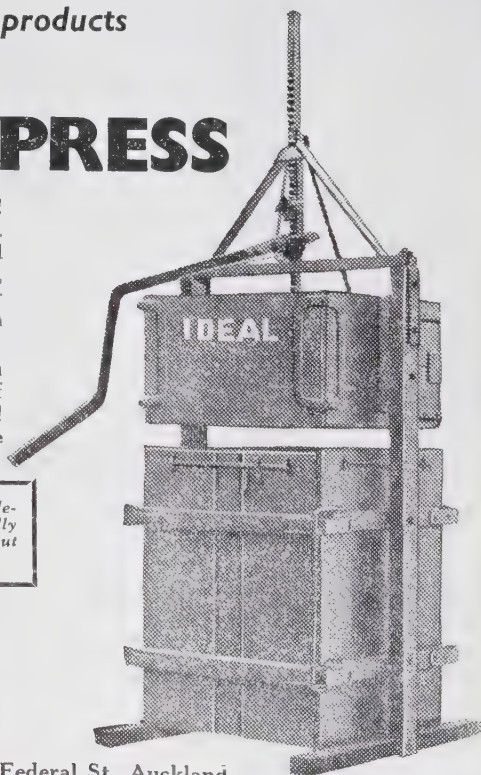
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FIELD PEAS

The Development and Performance of a New Blue and a New White Field Pea

—By —

R. A. CALDER, Agronomy Division, Lincoln College.

BY crossing Blue Prussian with Harrisons Glory there has been developed a new boiling pea at present designated Mammoth Blue. In comparison with Blue Prussian it tends to give higher yields and produces much larger and more attractive seed of equivalent cooking quality.

By crossing Blue Persian with Greenfeast there has been developed a new white splitting pea at present designated White Prolific. In comparison with White Ivory it definitely gives higher yields and the seed quality is almost as good.

New Blue Pea

Blue peas are used for canning or packeting and the annual consumption of such peas in Great Britain is well over 60,000 tons. In pre-war days the majority came from Holland, Belgium, and Japan, while a few were obtained from Tasmania. The dried peas are packed for sale in cans, packets and sacks.

The variety used extensively for the purpose is Blue Prussian which is classed as a field pea, and which produces small, smooth blue seed; it competes with Marrowfats for the packet trade but is definitely inferior to that variety. On cooking, blue peas are not as sweet as garden peas, but, when canned, a liquid containing sugar and salt is added; in this form they constitute a convenient substitute for green peas.

A limited acreage only is grown in this country which may be due to the fact that New Zealand Blue Prussians are not particularly popular in Great Britain owing to their variable hardness and slow absorption of water. In the packet trade these features are undesirable, for peas possessing them are difficult to prepare; for canning, lack of uniformity in hardness is a real defect as some peas reach the soft stage sooner than others, and this results in

an unsatisfactory product. New Zealand peas tend also to be rather small and sometimes to be of an inferior colour.

It has been recognised that these deficiencies do exist and although it was realised that some of them might be due to seasonal conditions and to methods of harvest, it was also considered that others might be due to the nature of the variety itself and that some improvement in quality might be effected by breeding methods.

Breeding Work

In an endeavour to develop an improved blue field pea a breeding project was commenced at Palmerston North in 1932 when a considerable number of crosses were made using Blue Prussian as one of the parents. Eleven other varieties, mostly garden, were used in various crosses as the other parent. During subsequent years observations were made from selections of these hybrids with a view to retaining only those showing desirable features.

Finally, after extensive trials it was decided in 1941 to retain a selection



Fig. 1.—Dried pods. Left: Blue Prussian. Right: Mammoth Blue.



Fig. 2.—Dried pods and seed. Left: Blue Prussian. Right: Mammoth Blue.

from the Blue Prussian—Harrisons Glory cross which will be available for distribution next season under the name “Mammoth Blue.”

Characteristics of Mammoth Blue

Plant: Height at maturity approximately 2ft. 6in. to 3ft. Tends to be a little shorter than Blue Prussian. **Stem:** Fairly stout. **Foliage:** Medium to dark green in colour. **Flowers:** White. First flower occurs at fourteenth to sixteenth node (same as Blue Prussian).

Pod: Illustrated in figure 1. **Size:** Longer and broader than Blue Prussian. **Colour:** Medium green. **Shape:** Straight with rounded to blunt end. **Occurrence:** Single and double. **No. of peas per pod:** 5-6.

Seed: Illustrated in figure 2. **Surface:** Smooth. **Colour of seed coat:** Blue. **Colour of cotyledon:** Green.

No. per oz.	..	..	..	Mammoth Blue = 92	} Grown under similar conditions.
				Blue Prussian = 174	
Weight per 100	..	..	..	Mammoth Blue 34.4 grms.	
				Blue Prussian 18.2 grms.	
Seed much larger than Blue Prussian.					
Seed coat as % of whole seed.				Mammoth Blue = 8.0	
				Blue Prussian = 9.3	

Maturity: A little later than Blue Prussian. **Yield:** Mammoth Blue has been under test for five years and the following results indicate its yielding capacity in comparison with that of Blue Prussian on a percentage basis.

Type.				Year.	
				37-38	38-39
Mammoth Blue	..	..	..	154.8	111.5
Blue Prussian	..	..	..	100.0	100.0
				Diff.	Diff.
				Sig.	Sig.
				Non Sig.	Non Sig.
				Sig.	Sig.

From the table it can be seen that, although there was no significant difference between the two types in the 1939-40 and the 1940-41 season, in the other years the new type was definitely superior. In all years, however, the size and appearance of the seed of Mammoth Blue showed a considerable improvement over that of Blue Prussian.

Cooking Quality

Cooking tests have been carried out both at the Agronomy Division and by the School of Home Science, Dunedin, these indicating that the cooking quality is at least as good as that of Blue Prussian.



Fig. 3.—Dried pods. Left: White Prolific. Right: White Ivory.

It was the recognition of this position that prompted an attempt being made to develop improved types and as a result of hybridisation and subsequent selection several promising lines have been isolated.

Breeding Work

The breeding work was initiated in Palmerston North in 1932 when a wide range of crosses was made between about 12 varieties of garden and field peas. The procedure adopted subsequent to the initial crossing was to make single plant selections each season from the most promising lines. By 1941 sufficient information was available to make a decision to retain only a Blue Prussian-Greenfeast cross which will be distributed under the name of ‘White Prolific.’

Characteristics of White Prolific

Plant: Height at maturity approximately 3ft. to 3ft. 6in. Tends to be taller than White Ivory. **Stem:** Medium thickness. **Foliage:** Medium green. **Flower:** White. First flower occurs at 14th-16th node (similar to White Ivory).

Pods: Illustrated in figure 3. **Size:** Longer and broader than White Ivory. **Colour:** Medium green. **Shape:** Curved with pointed end. **Occurrence:** Single and double. **No. of peas per pod:** 6-7. Pod tends to resemble that of Greenfeast.

Concrete

has many uses on the farm. Instruction in the mixing of concrete and guidance as to its use is contained in “Concrete on the Farm” (bulletin 184) issue free by the Department of Agriculture.

Conclusion

It is considered that Mammoth Blue is a definite improvement on Blue Prussian in that it tends to give higher yields and produces larger and more attractive seed of equivalent cooking quality.

New White Pea

White peas are used for splitting for soup purposes and it has been estimated that, prior to the war, Great Britain imported over 15,000 tons annually; these came either from the Continent or from India.

White peas are not grown to any large extent in New Zealand but it is possible that the acreage devoted to them could be increased if more satisfactory types were available.

The two varieties most commonly grown are White Ivory and Victoria Danzig which have white seed coats and yellow cotyledons. Victoria is a taller and larger seeded variety than White Ivory and, on account of its size, commands a correspondingly higher price. Both are used commercially in the production of split peas but the yields are so far below that of Partidge that farmers are disinclined to grow them to any extent; particularly is this so in the case of Victoria Danzig.

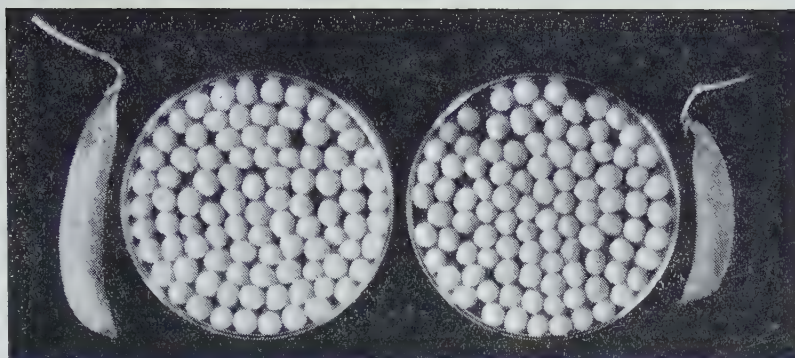


Fig. 4.—Dried pods and seed. Left: White Prolific. Right: White Ivory.

Seed: Illustrated in figure 4. **Surface:** Smooth, some pitted. **Colour of seed coat:** White or greenish white. **Colour of cotyledon:** Yellow.

White Prolific tends to be a little larger in seed size than White Ivory.

Conclusion

It is considered that, as far as yield is concerned, White Prolific is a definite improvement on White Ivory, but that the quality of the seed, though

Number per oz.	..	..	White Prolific = 113	} Grown under similar conditions.
			White Ivory = 124	
Weight per 100	..	..	White Prolific 24.5 grms.	
			White Ivory 22.3 grms.	

Maturity: A little later than White Ivory. **Yield:** White Prolific has been under test for five years and the following results indicate its yielding capacity in comparison with that of White Ivory on a percentage basis.

Type.				Year.	
White Prolific	..	..	..	37-38	38-39
White Ivory	..	..	..	143.5	133.2
				100.0	100.0
				Diff.	Diff.
				Sig.	Sig.
				Not sig.	Sig.

From these results it is apparent that White Prolific invariably gives a considerably greater yield than White Ivory.

Quality

To determine the quality of the seed for soup purposes small samples have been split and made into soup. In respect of consistency and flavour that made from White Prolific was little different from that made from White Ivory, but the colour was a little paler.

probably quite acceptable, is possibly a little inferior.

Acknowledgments

These breeding projects were pro-

posed by Mr. J. W. Hadfield, the present Director of the Linen Flax Section, Department of Industries and Commerce, Christchurch, initiated by him and the author and ultimately taken over by Mr. C. M. Driver, at present overseas.

Thanks are due to Messrs. Kirkpatrick and Co., Ltd., to Cawthron Institute and to the School of Home Science, Dunedin, for their helpful co-operation.

Distribution of New Varieties of Field Peas

THE Department of Agriculture has been authorised to distribute under its certification scheme, the produce of the areas of these two varieties of peas at present being grown under contract. Farmers who are interested in obtaining supplies of either of these varieties are advised to communicate

their requirements to their usual mercantile firm so that the orders may be forwarded to the Director of the Fields Division, Department of Agriculture, Wellington, for consideration.

These orders will be accepted subject to seed being available and to con-

firmation of the order when the price of the seed has been determined.

It is proposed that the seed available for distribution will be supplied to growers in those districts most suitable for the production of peas, and in quantities sufficient wherever possible for sowing a complete paddock. Growers should indicate therefore in making application, the locality in which they propose to grow the peas, the acreage of the paddock to be sown, and the quantity of seed and the variety required.

—J. H. CLARIDGE, *Seed Certification Officer, Wellington.*

Examination of Ryegrass Seed for Blind Seed Disease

IN view of the rising cost of harvesting operations, many growers of ryegrass seed will be anxious to avoid bringing in crops which are unprofitable on account of the low germination of the seed.

In most cases of low germination in ryegrass seed, the trouble is caused by the "Blind-seed" fungus, and can be detected before the seed is harvested. For several years past many farmers have made a practice of having their seed examined as it approaches maturity, to ascertain to what degree it has been damaged by the disease, and what germinating capacity it may be expected to have. This service is available to all seed growers and for the benefit of any who may wish to take advantage of it for the first time, the following information with regard to the collecting and packing of samples is given.

The sample for examination should be taken within a week before cutting, because the disease can spread up to the time when the seed is mature. The sample should not be collected when the grass is wet with rain or dew.

It is of the utmost importance that the sample should be representative of the whole crop, otherwise the information obtained may be quite misleading. The sample must be made up of seed heads from a large number of points scattered throughout the field. To sample a crop properly, it is necessary to walk to and fro across the field in such a way that the whole area is covered evenly, at the same time stopping every few paces to pick up one seed head at random. A small sheaf about

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neglect proper farm shelter. Valuable information on this subject is available in bulletin 182, "Farm Shelter," issued free by the Department of Agriculture.

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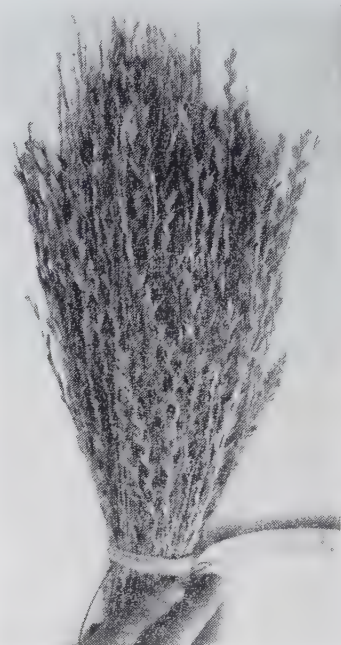
Haymaking

Poor quality hay lowers production, and brings about stock trouble. The

essential points which must be observed in successful haymaking are outlined in Bulletin 183, "Do You Make Good Hay," issued free from the Department of Agriculture."

the thickness of a man's wrist should be collected in this way. The job takes time, but it is something that a school child can be taught to do.

When the sample has been collected, it should be tied, trimmed and labelled. The accompanying illustration



shows how the sample should be prepared.

It is of great assistance to those examining the seed to have the sample arrive in a fresh condition. For this reason the sample should be rolled tightly in several layers of paper as soon as possible after it has been collected, and dispatched by the earliest mail to the Seed-Testing Station, Box 609, Palmerston North.

—E. O. C. HYDE, Seed Analyst,
Seed Testing Station,
Palmerston North.

Careless Handling of Pigs

Concern is felt in many quarters at the prevalence of bruises and weals on various parts of the skin of pigs. Farmers, dealers and carriers should do their utmost to avoid causing skin blemishes, which may bring about the degrading of otherwise prime porker or baconer carcasses. Much can be done by a little more care and patience, the use of a proper yard and loading race, and the absolute prohibition of rough handling, stock whips and sticks.

All engaged in the handling of pigs should obtain a copy of the Department's free bulletin (No. 175) on this subject.

RED CLOVER SEED DAMAGED BY FAULTY THRESHING

In the past New Zealand red clover seed has been held in high esteem in overseas markets on account of its consistent good quality. Unfortunately, the high standard is not being maintained. With increasing frequency, English buyers are complaining of the unsatisfactory purity and germinating capacity of red clover seed imported from this country. The reason for the deterioration in quality is the growing prevalence of damage resulting from faulty threshing.

THE causes of threshing injury and the precautions which should be taken to minimise it have been dealt with by Mr. S. H. Saxby in an article in the "Journal of Agriculture," November, 1941. There remains, however, widespread misunderstanding as to the nature of threshing injuries, and as to the way in which injured seeds are dealt with when the seed is tested.

Invisible Damage

The general appearance of a badly-damaged sample may be very good, for the injuries caused by heavy threshing

— By —

E. O. C. HYDE, Seed Analyst, Seed Testing Station, Palmerston North.

are not conspicuous. Upon close inspection of a sample a few chipped seeds may be detected, but these represent only a part of the damage that is done. In many seeds internal fractures are produced which are not visible, but which result in the seedlings breaking into pieces during germination. Other seeds again are merely bruised. These may germinate normally while fresh, but they do not retain their vitality for as long a period as seeds which have not been roughly handled.

Testing

When testing samples of red clover seed, the pieces of broken seeds are removed as impurities, and classified with other rubbishy material as "inert matter." Chipped and cracked seeds are also classified as "inert matter" if they are injured in the region of the root or the base of the seed-leaves, and are obviously incapable of producing useful seedlings. On the other hand, seeds in which only the upper parts of the seed-leaves are chipped or cracked are not regarded as impurities, for they may produce seedlings which, although weakened, are not entirely useless. The manner in which the chipped seeds are classified in the purity analysis is illustrated in Fig. I.

The presence of an excessive proportion of chipped seeds renders a line of red clover seed unsuitable for the export trade and may exclude the line from certification. The standard of purity required for certification, in the case of red clover seed, is 96 per cent. Of the red clover samples tested during the first ten months of the current year, 46 were below this standard. In 37 of these samples, the principal impurity was chipped seeds.

Broken Seedlings

The greater part of the damage caused by heavy threshing becomes apparent only when the seed is tested

for germination. In the germinator many seeds which appeared to be sound produce useless broken seedlings. These broken seedlings come from seeds in which the dry, brittle embryo has been fractured. Often the fracture does not extend to the more leathery seedcoat, and in such instances the injury cannot be detected, even by a careful examination of the seed.

Broken seedlings are of no value, and are not included in the germination counts. Commonly, the seedling falls into two or three separate pieces. In some cases, only the tip of the root is broken off the seedling. The root then fails to grow normally. Side roots may develop from the stump after some days, and when this happens the seedling may survive if conditions are very favourable, but under field conditions such seedlings are worthless.

Conclusions

The damage caused by faulty threshing cannot be repaired by machine-dressing. The smaller pieces of broken seeds are removed by the machines, but most of the chipped seeds and all of the cracked and bruised seeds remain in the dressed line. Repeated dressing may increase rather than decrease the proportion of chipped seeds in a heavily-dressed line.

The solution of the problem is in the hands of those who supervise the threshing of the seed. The header harvesters are especially prone to damage the seed, but by constant attention to the machines, much of the trouble can be prevented. A close watch should be kept to see that seed is not being broken, and it should be borne in mind that even if only a small proportion of the seed is broken, much additional, though less conspicuous damage, is being done.

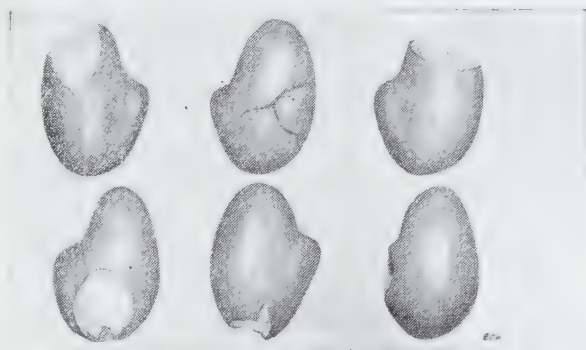


Fig. I.—Broken seeds from a heavily threshed sample. Upper row: Seeds not classified as impurities. The injuries affect only the seedcoat and the upper parts of the seed leaves. Lower row: Seeds classified as "inert matter." The injuries affect the root and the base of the seed leaves. These seeds cannot grow.

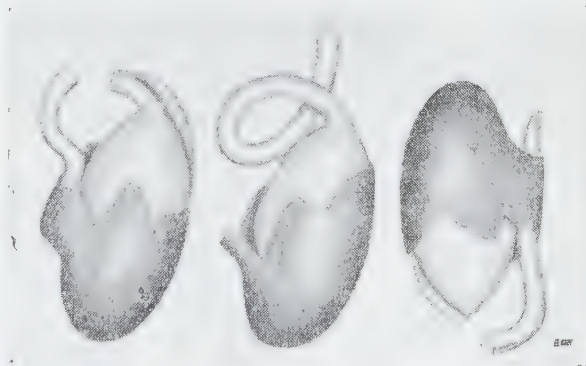


Fig. II.—Broken seedlings from seeds cracked by heavy threshing. Such seedlings are not included in the germination counts. Left and right: Seedlings broken near the base of the seed leaves. Centre: Seedling with the growing tip of the root destroyed.

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Veterinary Notes for the Farmer

Prolapse of the Rectum in Pigs

PROLAPSE of the rectum in growing pigs is a fairly frequent occurrence and in view of the value of store pigs, the saving of individual animals is of importance. An operation which, if performed with reasonable care, is successful in dealing with this condition is described below.

This complaint is caused by straining—thus constipation or diarrhoea may give rise to it. Unsuitable troughs, i.e., those that are too high, cause pressure on the abdomen of young pigs when they climb up to them at feeding time, with the result that pressure on the distended belly may cause a prolapse of the rectum. The prolapse at the earliest stages may be reduced, but often the condition is not observed until the tumor has become of such a size that its reduction is impossible and an operation is the only hope of remedy.

Materials Required

Two surgical needles (short darning needles would do in emergency), a length of thread (a suitable thread may be made by taking half a thickness of seaming twine, i.e., about two strands and twisting them together), scissors or knife, and disinfectant solution. A needle is threaded on each end of the thread.

Method

Rope loops are passed round the hind legs above the hocks and the pig is suspended by them with head clear of the ground. In this position the animal cannot strain, which is very important when operating. The tumor is washed with warm water and disinfectant and is then opened along the

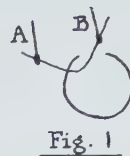
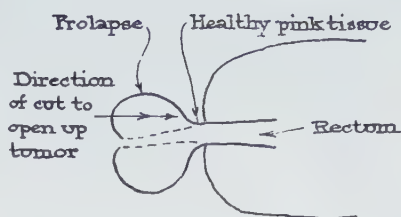


Fig. 1

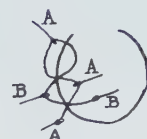
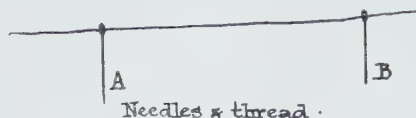


Fig. 2



Needles & thread.



Fig. 3

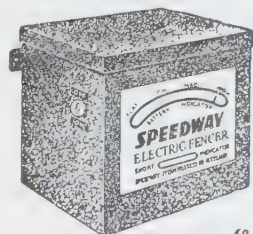
top by cutting along its length until the healthy, pink tissue just outside the anus is reached. If faeces are present in the rectum they are removed at this stage. One needle (A) is now passed in the healthy tissue from inside to the outside (see fig. 1) and then repassed through the same tissue half an inch distant from the first exit (fig. 2). The second needle (B) is now pushed in the opposite direction through the last puncture made (see fig. 2). The stitch is then tightened by pulling both ends of the thread and the stitching is continued in a similar manner until the circle is completed (see fig. 3). This method of stitching is similar to that employed by a saddler when he sews a leather trace. The two ends of the thread are now tied together and the needles, with superfluous thread are cut off. The tumor, likewise, is removed with scissors or knife about quarter of an inch behind the stitching,

when the stump will disappear through the anus.

The patient should be placed in clean quarters and given light food for three days with a teaspoonful of Epsoms salts added to the morning ration. No further treatment is necessary, the stitches sloughing out of their own accord.

—T. H. HANKIN, M.R.C.V.S.,
Veterinarian, Whangarei.

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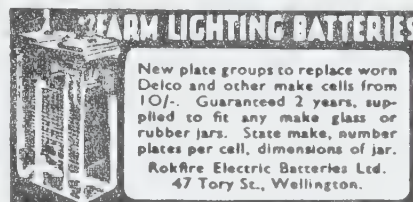
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Ruptured Liver

THIS case may be of interest to breeders of horned sheep as it occurred recently in a Dorset Horn ewe running on a property near Wellington. The subject was a young, well-grown ewe in heavy condition and in the early stages of pregnancy whereas the remainder of the flock had lambed already. The animal was found dead after showing signs of distress and staggering.

The post-mortem showed a large quantity of blood, free in the abdominal cavity, and on examining the liver which was distinctly fatty a split was found running up between the lobes and involving the capsule. The owner stated that these sheep frequently bunt each other in play, and the ram, which was running with the ewes, was particularly rough in this way and had been

seen to bunt the ewes in the side. The fact that the ewe was in heavy condition and the liver fatty and tense undoubtedly made her susceptible to the rough treatment, death being due to internal haemorrhage.

—H. D. LE SOUEF, B.V.Sc.
Veterinarian, Wellington.

Tainted Meat

A CASE occurred recently of some ox beef being found tainted with an onion flavour on slaughter at an abattoir. The look of the flesh was very slightly yellowish and dull but on cutting into the muscle and fat down to the bone the smell came out strongly. It did not disappear on hanging and when cooked was still disagreeable.

These particular beasts which were in excellent condition had been grazed on a property on which onions were grown extensively, and they had evidently eaten freely of the plant which was washed down the river on to the flats where the cattle were grazing.

—H. D. LE SOUEF, B.V.Sc.,
Veterinarian, Wellington.

Answers to Correspondents

Hack With Cracked Forehoofs

"G.C.A.J." (WAIROA):—

I have a good sort of a hack about five years' old, not long broken in, a beautiful animal to ride and look at. It has one fault—the front feet are both badly cracked right from the coronet. Is there anything that I could do to stop it? The front feet are inclined to be chalky.

I would be very much obliged if you could let me know whether there is any way of curing him or not.

LIVESTOCK DIVISION:—

These may be to some extent due to neglect of the hoofs and allowing them to grow long, which might occur in a horse of this age running unbroken. However, the fact that the hoofs are apparently "chalky" may be an indication that horn is naturally of poor quality. It may be that a hereditary factor is also concerned.

Careful attention to the feet may allow the cracks to "grow out" eventually, which would take nearly twelve months. Three things could be



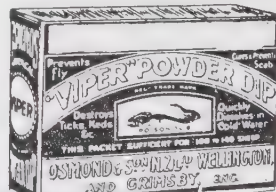
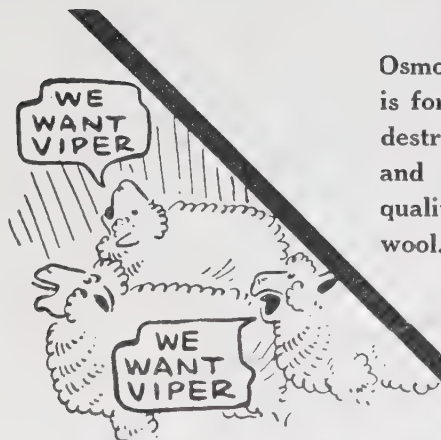
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OSMOND'S "VIPER" POWDER SHEEP DIP

tried, namely, shoeing, grooving the hoof, and a hoof dressing.

(1) **Shoeing:** If you are within reach of a blacksmith shoeing the horse in front with a plain slipper shoe, reasonably light, is recommended. The bottom of wall of hoof just opposite the crack should be eased just sufficiently to prevent touching the shoe when fitted. If a smith is not available, attend to feet yourself by keeping them trimmed; when using a rasp do not apply it to the face or surface of the hoof, but to the bottom edge only.

(2) **Grooving the hoof:** Make two grooves forming a V enclosing upper part of crack. For this a farrier's knife and some patience are necessary. Start the grooves about quarter of an inch below the coronet and one inch from crack and make them meet on the crack about half-way down hoof. They should be as deep as possible without drawing blood. Avoid injuring coronet, horn is thinner there.

(3) **Dressing:** Frequent applications of a mixture of mutton tallow and stockholm tar will help to prevent hoof becoming dry and "shelly."

Blistering: Blistering round coronets just above horn is sometimes recommended as a means of stimulating greater growth of horn. Leemings essence is convenient as horse need not have head tied up afterwards. However, other means should be tried first.

Inverted Eyelid in Lambs

"A.B.C." (TUATAPERE):—

Could you give me any information on the cause and prevention of inverted eyelids in lambs?

These lambs are born with one and sometimes two bottom eyelids turned in so that the wool is against the eye. This causes much mismothering and many second grade lambs as well as a few deaths.

I have about 40 to 50 each year out of about 900 lambs. It occurs in both Romney and Romney-Southdown cross lambs, also in lambs from bought-in ewes.

LIVESTOCK DIVISION:—

This condition is not uncommon in lambs, and causes a lot of trouble in some flocks. It is almost impossible to attribute a cause to the condition, unless it arises from some hereditary factor. As it occurs in both Romney and Romney-Southdown cross lambs, and also in lambs from bought-in ewes; this would appear to rule out any hereditary factor.

Although it will remain difficult to prevent cases of the trouble cropping up in view of the lack of information as to the cause, the eyelids of affected lambs may be successfully treated if the time is available. The eyelid should be turned out so as to prevent the eyelash from rubbing on the an-

terior surface of the eyeball. A small elliptical piece of skin below the affected eye and parallel to the lower eyelid should be removed with a pair of sharp scissors. If a stitch is now inserted to bring the remaining edges of the skin together, it will be found that the stitch has the effect of keeping the eyelid in its proper position, and thus prevent any further trouble. No after treatment is required as a rule, as the stitch wound will heal up without trouble. In very slight cases eversion of the affected lid, together with the application of some mild antiseptic lubricant may be all that is necessary. Boracic ointment or golden eye ointment will be found quite useful.

Cow With Mastitis

"W.L." (BALCLUTHA):—

A cow, though fairly aged and which has calved every year has failed this year to have a calf. She has been milked constantly to keep her in milk. I found her milk is inclined to be thick and clotted.

LIVESTOCK DIVISION:—

Cows in lactation that fail to get in calf, frequently milk for very long periods, providing they are in good bodily health and well fed. A taint due to physiological changes in the animal is the strong bitter taste sometimes noted in milk from cows which have been a long period in milk. Under such circumstances the cow ought to

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be dried off. Should she get in calf again, when she comes in milk, it would in all probability be found to be perfectly normal.

However, from the description of the change in the milk I think the most likely thing to be wrong is that the cow is affected with a mild form of mastitis, or catarrh of the udder, due to the development of some variety of micro-organism. Under such circumstances the udder should be well massaged at least three times a day, using camphorated or olive oil as a lubricant. In addition each quarter should be well stripped out.

Internally you might give a dose of medicine containing—

Epsom Salts ..	..	1 lb.
Ground Ginger ..	..	2 ozs.
Molasses ..	..	$\frac{1}{2}$ lb.

in a quart of water.

Mineral Deficiency

“A.M.” (CLEVEDON):—

I have a six-year-old gelding (hack) bred on the farm. He has been exceptionally well “done” all his life, but his teeth are wearing down badly. This country is lime deficient, but I have always applied lime liberally and there

is a good sole of grass (rye, white clover, paspalum) and no rat-tail.

I do not think the hereditary factor is responsible, as a medium draught gelding bought at four-year-old had the same trouble by the time he was seven. The country is loam on clay, so there is no sand or silt to cause the trouble.

LIVESTOCK DIVISION:—

The cause of the teeth of your gelding wearing down quickly must, in the circumstances, be attributed to lack of bone-forming minerals in the food supply of the animal in its young life. One of the essential minerals in bone formation is lime, but a second and important mineral is phosphorus. If either one is lacking, the tendency to the formation of soft skeletal tissues results. In this case it would appear as if the lime element is of more importance.

To correct a mineral deficiency in the diet of a young growing animal such a supplement as sterilised bone flour is recommended. If the young animal is being fed any concentrates such as crushed oats and bran, it is relatively an easy matter to add a tablespoonful of sterilised bone flour to the feed daily. However, as this animal is six years old with the teeth

already formed, it is not likely that the mineral matter would now have much effect in preventing the wear of the teeth already formed.

If, however, it is necessary to give supplementary feed during the winter months, sterilised bone flour could be tried out, being added to the chaff or other feed. Bran is a valuable supplement in the rearing and feeding of horses, as it is particularly rich in phosphate.

Sheep Dipping

Practical points in sheep dipping, including the design and construction of sheep dipping baths, is the subject of the Department of Agriculture's Bulletin 181. Mr. J. E. Duncan, Wool Instructor, has in this bulletin endeavoured to cover concisely all the aspects of dipping. It is designed to fill a definite want, as most of this information has formally been scattered or available from commercial firms only.

This bulletin is free and copies may be obtained from the Department of Agriculture, Wellington.

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Farm Practice and Management

Topdressing on the Coromandel Peninsula

STRETCHING from a line through Paeroa in the south to Port Jackson at the northernmost point, the Coromandel Peninsula consists of fairly broken country, much of which still retains its original heavy bush covering. In parts, however, this bush has been milled and cleared away to make room for agricultural pursuits. Farming activities have been confined mainly to the raising of store cattle and sheep rather than fattening. This has been dictated largely because of the broken nature of much of this country.

In certain localities, however, belts of reasonably easy country are to be found where dairying and a certain amount of topping-off can be practised. On such areas topdressing has been carried out on a modified scale, and with results of a highly beneficial nature.

Transport Difficulties

The difficulties associated with such work on this country are, unfortunately, numerous and considerable. For instance, in the absence of rail beyond Thames, all fertiliser has to be taken from the railhead by lorry. In many cases it has to be handled a third time by horse-drawn vehicles in transporting it from main roads to farms, and the farmer concerned is perhaps fortunate if he is not then faced with the necessity to pack it out a few miles along tracks to the areas where it is to be applied. Where fertiliser arrives by boat the farm wagon and pack

horse must still be brought into action in order to deliver the material where it is required.

This problem, in itself, is serious enough where a straight fertiliser such as superphosphate or basic slag is concerned; but, when one remembers that lime also is very desirable on much of this country in order to make phosphates more efficient, it will be quite apparent that adequate topdressing under a lime-phosphate programme becomes quite uneconomic.

Results of Trials

Fortunately, however, trials on this country have shown quite conclusively that serpentine super is well suited to this land. Dressings applied at the same rate as straight super have shown distinct improvements in pasture over the latter. In fact, even where heavy dressings of lime have accompanied the super the serpentine super areas have compared very favourably with them.

This fact should be noted by farmers on the Peninsula, as it means that their transport costs are considerably reduced by using serpentine super in-

stead of super-lime. Furthermore, under rationing they get 27 cwt. of this fertiliser for every ton of super to which they are entitled. Consequently they can obtain a better farm coverage with the manure available.

Conclusions

Trials have been fairly widespread over this area, but none show an adverse result through using serpentine super. It could thus be taken as a fairly reliable guide that any country, which previously responded well to a lime-super dressing, will react at least equally as well to the serpentine super mixture; and in view of the great reduction that this will mean in transport costs together with the saving in petrol, tyres, manpower and rail haulage, farmers would be materially contributing towards the war effort as well as improving the efficiency of their topdressing if they would use more serpentine super and less super-lime on this class of country.

—C. WALKER, *Instructor in Agriculture, Thames.*

North Island Lambing Estimates.

INFORMATION supplied by Inspectors of Stock shows that the average rate of lambing for the current season in North Island flocks is estimated at 89.95 per cent., compared with 90.74 per cent. in 1941. This estimate is not as accurate as in previous years, the number of breeding ewes being based on 1941 figures, as no figures are available for 1942. Based on the 1941 figure of 11,268,384 breeding ewes, the estimated number of lambs is 10,134,505. Previous estimates have somewhat under-estimated the number of lambs killed, so that it is probable that this total will be exceeded. Dominion estimates by counties, together with South Island estimates, will be published in next month's issue of the "Journal."

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Sowing of Grass With Turnips

AN instance of the effect of a crop of white turnips on the establishment of permanent pasture sown at the same time has been observed on light land on the Waimea Plains of Southland.

The whole paddock had been sown to turnips and grass except for a drill strip through the centre, which had been sown to grass only.

When first seen in the November (approximately twelve months after sowing) the turnips on half the area had been grazed some considerable time previously while the other half had not been grazed at all but had been saved for a seed crop, and was

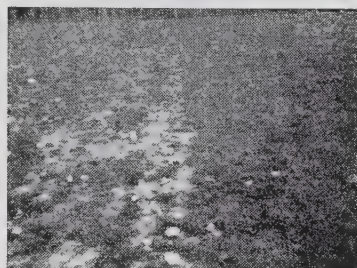


Fig. 1.—Relative pasture establishment where sown with turnips (left) and alone (right).

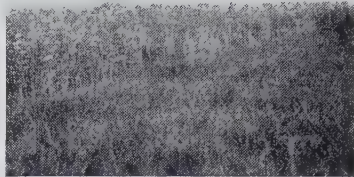


Fig. 2.—Grass growth on an area ungrazed for twelve months after sowing.

in full flower. The accompanying photographs show very graphically (1) the relative pasture establishment as affected by a crop of turnips intended for feeding, and (2) the effect on pasture establishment of non-grazing for a period of twelve months after sowing.

The area was again seen in the winter following, when the bare patches seen in the photographs had filled up somewhat (mostly with weeds) but the pasture was still very inferior where the turnips had been sown as a cover crop.

—J. H. CLARIDGE, Seed Certification Officer, Wellington.

Pig Industry Broadcasts.

UNDER the auspices of the District Pig Councils concerned broadcasts will be delivered in January as follows:—

1YA, Auckland, January 21, 7.15 p.m.—“Breeding Programme, or Fitting Pigs to the Feed Supply,” by Norman Carter, Supervisor, Bay of Plenty District Pig Council.

2YA, Wellington, January 19, 8.30 p.m.—“Equipment That Makes Pig-Keeping Easy,” by C. H. M. Sorensen, Supervisor, Taranaki District Pig Council.

3YA, Christchurch, January 21, 7.15 p.m.—“Carcase Quality,” by H. McIntosh, Supervisor, District Pig Council.

2YH, Napier, January 12, 7.30 p.m.—“Common Ailments,” by I. H. Owtram, Supervisor, Tairāwhiti District Pig Council.

Modern Piggeries.

Better housing, sanitation, and facilities for looking after pigs are among the first improvements that are made with profit on most farms where pigs are kept. Plans and specifications of houses and layouts actually in use in New Zealand are available in the Department's free bulletin, “Layout and Construction of Modern Piggeries.”

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An Ingenious Water Supply System

THE farm of Mr. C. Y. B. Sewell, Sil-verdale, like many farms in the north is not naturally endowed with a plentiful supply of water, and although a portion of the property is bounded by a creek, the cost of pumping and reticulation under present conditions makes water from this source somewhat expensive. Under these circumstances, Mr. Sewell decided to explore alternative possibilities, and with this end in view he turned his attention to a small soggy patch from which he had noticed that a trickle of water continually oozed out after wet weather.

Unfortunately, though capable of providing an appreciable supply in wet weather, the tiny spring failed on the approach of dry weather. However, although the flow had completely ceased, a careful investigation showed



A view showing the tiny spring with the siphon pipe dipping in to the 4-inch casing.

abundance of water a few feet below the surface, even in dry weather. The problem then was to get this water to the surface without the necessity for pumping or expensive plant.

As will be seen from the illustrations the solution proved extremely simple. Taking advantage of the natural fall of the ground, Mr. Sewell conceived the idea of siphoning the water to troughs placed further down



The siphon pipe leading down the slope to the troughs. Water will continue to flow so long as the level in the casing is appreciably higher than the outlet end of the siphon.

the slope. This was simply and ingeniously done by sinking a hole about five inches in diameter to a depth of about six feet and inserting about five feet of 4-inch piping to serve as casing. The siphon itself consists of about five feet of vertical $\frac{3}{4}$ -inch pipe let into the casing and connected to about 60 feet of piping leading to the trough.

To start the siphon, the lower end of the pipe was plugged and water poured in from the top end till the pipe was full. The top end was then inverted into the casing so as to dip well into the water at the bottom. When the plug was removed at the trough end, the water immediately began to flow and has since continued to provide a very welcome contribution to the farm water supply.

—P. S. SYME, Instructor in Agriculture, Warkworth.

Potato Planting by Plough

PLANTING potatoes by plough along the furrow is quite a common practice. The accompanying illustration shows a built-up hopper over a three furrow tractor-drawn plough, behind which the planter is seated. The tractor is driven slowly while the planter drops the sets down a chute



and these are covered by the centre furrow slice. In this instance the planted rows were pegged off and fertiliser was later drilled above the sets with a standard grain drill, appropriate coulters being blocked. By the above method the arduous work of potato planting was considerably speeded up by this grower.

—D. M. E. MERRY, Instructor in Agriculture, Nelson.

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Railways' Vital Role

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THE WAR CAN'T WAIT

Slaughtering of Stock

THE following returns of slaughtering of stock at meat-export slaughterhouses and abattoirs for the months, May to October, 1942, have been compiled by the Livestock Division:—

District.	Cattle	Calves	Sheep	Of which Ewes were	Lambs	Pigs
North Island.						
Meat-export Slaughterhouses—						
Auckland	120,770	537,960	43,815	23,167	122,703	69,742
Poverty Bay-Hawkes Bay	30,078	53,280	53,438	33,798	134,145	7,752
Taranaki-Manawatu ..	56,717	194,333	16,719	12,301	131,366	38,502
Wairarapa-Wellington ..	24,758	20,221	32,072	15,206	113,700	7,050
Totals	232,323	805,794	146,044	84,472	501,914	123,046
Abattoirs	66,683	20,754	310,212	139,390	31,174	56,407
North Island Totals ..	299,006	826,548	456,256	223,862	533,088	179,453
South Island.						
Meat-export Slaughterhouses—						
Nelson-Marlborough ..	1,340	10,472	7,516	5,239	38,852	2,317
Canterbury-Westland ..	6,802	30,761	100,218	72,051	293,058	11,609
Otago-Southland	7,750	34,917	61,068	49,363	516,029	2,893
Totals	15,892	76,150	168,802	126,653	847,939	16,819
Abattoirs	53,976	12,092	247,062	126,737	23,654	23,474
South Island Totals ..	69,868	88,242	415,864	253,390	876,593	40,293
Dominion.						
Meat-expt. Slaughterhouses	248,215	881,944	314,846	211,125	1,349,853	139,865
Abattoirs	120,659	32,846	557,274	266,127	59,828	79,881
Grand Totals	368,874	914,790	872,120	477,252	1,409,681	219,746
Same Period, 1941—						
Meat-export Slaughterhouses and Abattoirs	281,300	911,899	843,228	505,184	1,599,765	278,219
Same Period, 1940—						
Meat-export Slaughterhouses and Abattoirs	321,893	922,467	1,087,023	674,318	1,448,447	252,934

Slaughtering of Pigs

The 42,257 pigs slaughtered at meat-works and abattoirs during the month of October, 1942, were distributed in weight ranges approximately as follows:—

Up to 60 lb.	158	The grading of porkers was 89 per cent. of 1st quality, 11 per cent. of 2nd quality; and that of baconers 78 per cent. of Prime 1's, 17 per cent. of Prime 2's, and 5 per cent. of 2nd quality.	
61 to 120 lb.	13,673	In the different weight ranges of baconers the grading was as follows:—	
121 to 160 lb.	18,481	82%, 14%, 4% of P1's, P2's and 2nds respectively.	
161 to 180 lb.	5,909	63%, 25%, 12% of P1's, P2's and 2nds respectively.	
Over 180 lb.	1,616		
Sundries	2,420		

Lucerne Sowing

THE most general method of sowing down lucerne areas in Canterbury is to drill the seed into the ground through every coulter of a grain drill. The advantage of this method over broadcasting is that more even strikes are obtained if the seed bed has been well prepared and the job of drilling properly carried out. Moreover fertiliser can be applied where it is of most benefit in stimulating lucerne growth. As lucerne requires to be sown very shallow the necessity of retaining moisture near the surface of the seed bed is most important.

The Seed Bed

Therefore where land requires to be summer fallowed for eradication of fathen or other annual weeds, early cultivation should be deep and thorough, and therefore the only implements required for later and final cultural operations before sowing are the roller and tine harrows. Use the roller to firm the topsoil thereby encouraging the germination of annual weeds near the surface, and the harrows to eradicate them. Frequent harrowings at suitable intervals are generally necessary to obtain a good kill of weeds, and rolling just before sowing is, of course, nearly always desirable to thoroughly firm the seed bed. Grubbing just prior to sowing should not be resorted to unless in exceptional circumstances. Grubbing at that stage not only brings fresh weed seeds to the surface at an undesirable period, but also, by its action in practically ridging the soil, grubbing encourages rapid evaporation of moisture at a period when its conservation may be most important in ensuring a rapid and even strike of lucerne.

Sowing the Seed

When grain drills are not fitted with a rape feed attachment suitable for sowing the required per acre quantity of lucerne, the usual method is to sow seed and manure from the same box. To obtain a more or less uniform seeding by this latter method the drill requires to be discharging practically a continuous flow of material from the manure box. Unless this is so, seeding naturally will be irregular. Such happenings are not altogether uncommon, and are of course due to sowing relatively small quantities of fertiliser per acre.

This difficulty may be overcome by using carbonate of lime as a filler in addition to the relatively small quantity of phosphatic manure now available and increasing the manure speed drive accordingly.

—J. G. McKAY, *Fields Instructor, Christchurch*

In the Orchard and Vineyard

Orchard Notes

Spraying, Green Cropping and Harvesting Stone Fruit

WITH the advent of hot dry periods, insect pests become more troublesome. Codling moth and leaf roller caterpillar may do considerable damage to the maturing crops if spray coverage is inadequate during the summer months. Lead arsenate $1\frac{1}{2}$ lb —100 gallons of water should be applied at intervals of 18 to 21 days.

During this month a close watch should be kept for the first appearance of red mite and to prevent the increase of this pest, which may seriously debilitate the tree foliage, summer oil 1-100 should be applied and repeated in ten days if necessary. (Summer oil should not be applied within ten days of sulphur sprays).

Leaf hopper is especially troublesome in dry periods but may be readily controlled by adding nicotine sulphate 1-800 to one of the sprays being applied at the period when the hopper is in the nymph stage. As both red mite and the nymphs of the leaf hopper habitate the undersides of the leaves, care must be taken when applying sprays to ensure that the undersides of the leaves are thoroughly wetted.

In districts where ripe spot and bitter rot are usually troublesome, Bordeaux 1-2-50 may be substituted for the sulphur sprays from beginning of January. When Bordeaux is applied during the summer months a wetting agent is required to reduce the blotchiness of spray deposit on the fruit. A suitable wetting agent is casein. Thoroughly mix while dry $\frac{1}{4}$ lb. case with $\frac{1}{4}$ lb. hydrated lime and shake gradually into a gallon of water while stirring vigorously; add to 100 gallons spray.

Green Cropping

The provision of organic matter is one of the surest ways of increasing the fertility of the soil. In many of our orchards soils the organic content has become seriously depleted due to years of intensive cultivation and lack of ploughing under of green matter. Build up the fertility of your soil by growing and ploughing under some satisfactory green crop such as blue lupins, field peas, vetches, etc.

Blue lupins have proved the most satisfactory green crop for most conditions and types of soil and these should be sown at the rate of $1\frac{1}{2}$ bushels per acre. They are ready for turning un-

der just when they come into flower. For ploughing under in autumn they should be sown in early January, and in late February for ploughing under in spring. From 1 to 2 cwt. per acre of superphosphate should be sown with the seed.

On soils which are liable to scour during winter rains, it may be of advantage to let the green crop remain throughout this period and plough under in spring. As this leafy crop acts as a dewatering agent of the soil it is of benefit to grow the crop during winter on waterlogged soils, and those liable to winter flooding. Wet soils carrying a green crop throughout the winter months are always in better mechanical condition in the spring than bare soils left unploughed or those left in fallow.

Harvesting Stone Fruit

December ushers in the commencement of fruit harvesting with the early peaches and plums. One of the difficulties with the early varieties is to se-

cure sufficient size in the fruits and heavy thinning is generally necessary in order to achieve satisfaction in this direction.

Greater care is necessary in the handling of the stone fruit crop than with pip fruits due to the softer nature of the fruit and the greater liability of damage and consequent wastage.

Tins which can be easily sterilised are the recommended picking receptacles. The stage of maturity at which to pick is determined by the time which is to elapse before the fruit reaches the market and the distance the fruit has to travel to market. Fully ripe fruit is soft, bruises readily, and will not stand transportation.

Several pickings should be made, each time, harvesting only those fruits which have reached the desired stage of maturity. Pick the fruit carefully and avoid handling fruits affected with brown rot. Affected fruit should be gathered separately and destroyed.

During grading and packing the fruit should be handled with the greatest

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care to avoid bruising. Firm fruit may be handled over the grading machine provided that the machine is clean, and free from grit and hardened dirt which would tend to mark and damage the fruit. With riper fruit many growers prefer to hand grade and pack direct from the picking tins.

Typically coloured, well formed fruits free of disease and pronounced skin markings should constitute the first grade. When packing fruit for distant markets discard all bruised fruit and any with cracks, which

would be likely causes of decay. Wood wool protection at top and bottom of the case and correct height of pack should ensure safe carriage.

Shed sanitation is one of the most important factors in satisfactory handling of stone fruit. The shed should be kept clean and all reject fruit removed and destroyed each day. Potent causes of rots affecting the fruit during transport are the spores of brown rot or other rots which have come from diseased fruit in the shed. Picking receptacles should also be kept clean and

diseased fruit should never be placed in them. Special containers should be used for gathering or holding fruit affected with rots and these should be cleaned and sterilised from time to time.

The expenditure of care and attention during harvesting and packing will bring its reward through the fruit opening-up in better condition.

—R. G. I. HAMILTON, District Supervisor, Horticulture Division, Auckland.

Citrus Notes

Plant Nutrition

(Continued)

Iron

Chemical Symbol: Fe.

Occurrence in Nature: An impure form of iron occurs in meteorites. Iron also occurs as the oxides—haematite, limonite, magnetite, as the carbonate—siderite, and as the sulphide—iron pyrites.

Function: Iron exists in the plant in combination. It is essential for the formation of chlorophyll, where its action

is regarded as catalytic. Its action is linked with that of potassium.

Recommendations: Most soils, except white clays, contain plenty of iron. In the presence of calcium and manganese it is often unavailable to plants. It is necessary only in infinitesimal amounts. In its absence "chlorosis" develops and this can be cured by spraying with an 8 per cent. solution of ferrous sulphate. Iron deficiency is most common on calcareous or alkaline soils and therefore is not generally to be

found in the citrus-growing areas of New Zealand. Iron may be applied as limonite and occurs as a by-product in basic slag which contains 6 per cent. to 25 per cent. iron oxide.

Manganese

Chemical Symbol: Mn.

Occurrence in Nature: Manganese does not occur free but as oxides, carbonate and sulphide.

Function: Manganese plays a similar role to that of iron, i.e., it has catalytic action in the formation of chlorophyll. It inhibits the action of harmful bacteria attacking the roots, i.e., it is prophylactic.

Recommendations: Manganese absorption is closely related to the pH of the soil. Lack of manganese occurs on neutral or alkaline soils; but on acid soils, rich in manganese, poisoning may occur through an excess of manganese absorbed. Legumes are most sensitive to a lack of manganese. The symptoms of manganese deficiency are similar to those of iron deficiency, i.e., chlorosis develops. The young leaves show a fine pattern of green veins on a lighter green background. On mature leaves the contrast between the two shades of green makes identification difficult, as the mature leaves may show no pattern and be entirely green if manganese is only slightly deficient. The size and shapes of the leaves may be normal.

Manganese deficiency may occur on acid soils as well as on alkaline. Manganese is rapidly leached from very acid soils, so liming is advisable to bring the pH up to 6. Results have been obtained in the Auckland district by spraying with 5 lbs. manganese sulphate, 2½ lbs. hydrated lime to 100 gallons of water, during the month of September. It is also applied as a by-product in basic slag which contains 1 per cent. to 6 per cent. manganese dioxide. An application of manganese sulphate increases ammonification and nitrification. The action of manganese is linked with that of nitrogen.



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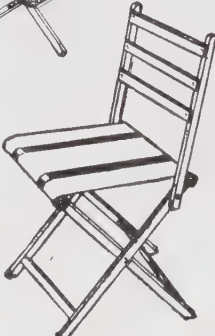
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Boron

Chemical Symbol: B.

Occurrence in Nature: Boron does not occur free but as boric acid, borax and borates.

Function: Boron is a prophylactic or preventive against disease. It stimulates the formation of the conducting element of the root and promotes nodule formation of legumes. In its absence calcium assimilation is reduced or inhibited.

Recommendations: The absence of boron results in a browning of the internal tissues, e.g., internal cork of apples, brown heart of swedes, and similar diseases of tobacco, sugar beet, and cauliflower. The optimum quantity is 1 part in a million. In California 3 parts per million of soluble boron in the soil is harmful, yet a trace of boron is necessary for the proper growth of all citrus trees, 5 lbs. per acre is detrimental. Boron deficiency is generally associated with an alkaline soil and has been observed on citrus trees in Florida during drought conditions.

—A. M. W. GREIG, *Citriculturist*,
Auckland.

Don't

neglect internal parasites in poultry. Full information is available in the Department's free bulletin No. 19.

Cool Storage Notes

Overhauling the Refrigerating Plant

WHILE the refrigeration plant is not in operation, and the storage chambers are emptied of fruit, a thorough examination of the ammonia compressor, condenser, and water circulating pump should be made by a competent refrigerating engineer. When the ammonia compressor is opened up for inspection particular attention should be given to—

1. The compressor valves, valve sealings, and tension springs.
2. The compressor pistons, piston rings, and cylinders.
3. The main bearings, also crank and small-end bearing.
4. The compressor shaft or piston rod, and gland packing.
5. Scale and oil traps.
6. Stop valve and expansion valve spindles and gland packing.
7. The condenser pump, and replacements and repairs effected where required.
8. The double pipe condenser for detection of corrosion on the cooling surfaces, or ammonia leaks.

9. All piping should be scraped free of rust and scale, and given a coat of a reliable anti-corrosive paint.

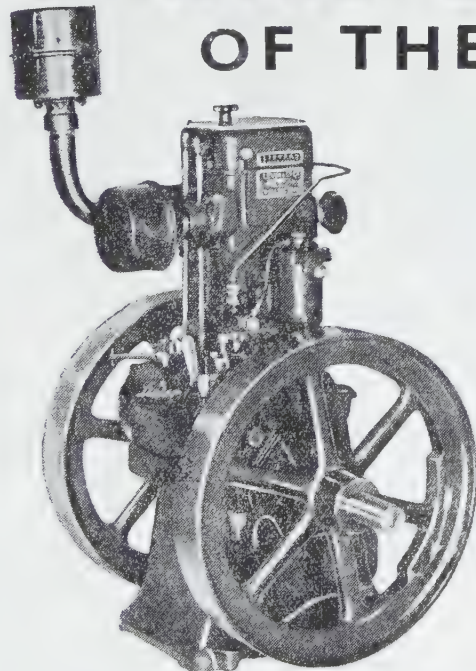
10. The power unit and power transmission belting should be thoroughly overhauled.

The building timbers and insulation of both the chambers and battery rooms, particularly when malthoid has been used to protect the timber, should be thoroughly examined, as dampness from condensation often brings about a rotting condition in the timber at the back of the malthoid. If the building has been erected on timber stump foundation, it is advisable to examine these stumps just below ground level, as rotting of the stumps may be taking place.

All cool storage repairs should now be under way, to have the whole of the equipment in good running order so that efficiency may be maintained throughout the coming season.

—A. A. POWELL, *Cool Storage Officer*, Wellington.

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Guide for the Home Garden

January Work in the Home Garden

JANUARY is not a very active period for seed sowing, and, provided immediate replacement of exhausted crops is not contemplated, no part of the home garden should be permitted to remain unoccupied and become merely a patch of weeds—a convenient breeding ground for diseases and injurious insects.

A small quantity of oats kept handy can always be used to produce a green manure crop on a vacant part of the garden. If the ground is dug in the usual manner, levelled off and the oats broadcast, they may be turned under in the newly-dug soil to a depth of two inches. At this depth the oats will be safe from birds and a heavier yield will be secured. Oats are a quick-growing green crop and, while preventing part of the garden remaining in a more or less derelict condition, will, when dug under and decomposed, considerably enrich the soil by the creation of additional humus.

Soil-improving Crops

"Green manure crops" and "cover crops" are terms often used to express

what is meant by "soil-improving crops." There is, however, a technical difference in the prospective utility value of each crop. The former is grown solely for the purpose of ploughing or digging into the soil so that additional humus may be created through the decomposition of the plant substance. The latter, while fulfilling the same function as the green manure crop, by the creation of additional humus, may be grown for the protection of the soil as well as for its improvement. A "cover crop" sown in early autumn and turned under in spring will, during its period of growth, prevent leaching of valuable plant food from the soil, particularly nitrogen. The plant nutrients thus utilised by the crop for its development will ultimately be returned to the soil.

Before sowing a green manure crop the home-gardener should consider the full advantage which may be gained while that part of his garden is not producing a worthwhile vegetable crop. In addition to conserving the plant food already in the soil, some green manure crops, during their grow-

ing period will accumulate from the air nitrogen which is stored in the roots of the plants. When the green manure crop is dug in this extra nitrogen is added to the soil and becomes available for the vegetable crop following. In view of the present fertiliser position in the Dominion, this aspect of green manuring should not be entirely disregarded. Deep-rooting cover crops will make available for future use nutrients obtained from the subsoil during the period of growth. The plant foods thus secured through decomposition after the crop is dug in, will considerably enrich the top soil.

To serve the dual purpose of creating additional humus and providing extra plant food which will further enrich the soil, seeds of a leguminous variety of plant should be sown. The blue lupin is most favoured, but the yellow variety might also be tried. Lupins have a forceful root system, sending a strong tap root deep down into the sub-soil. This is a considerable advantage as, by obtaining necessary moisture at lower levels, it enables the plants to withstand dry conditions, and assists in the utilisation of plant food stored in the subsoil, which otherwise would not be available to plants of shallow-rooting varieties. When the crop is dug in, the decaying roots assist aeration, thereby making heavy soils more porous.

The selection of the kind of green crops which may be grown will be largely determined by the quantity of artificial nitrogen available, and the time which can be allowed for the crop to remain growing in the garden. It should be recognised, however, that all soils will benefit to some extent by growing and digging in green manure crops.

Tomatoes

Under conditions at present obtaining in the Dominion it would be difficult to mention a crop in the garden—the potato excepted—which could be classed of greater importance than the tomato. The nutritional value of the fruit has previously been referred to in this Journal, and should require no additional comment. It seems only necessary to indicate that supplies for community consumption may be below normal requirements. For the commercial grower the growing season started with indifferent weather during November. The stormy conditions which obtained, varied with periods of

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What to Do in the Home Garden Next Month

Summary of Operations During January

SUCCESSIONAL SOWINGS.

Dwarf beans, lettuce (sow in drills), peas (dwarf variety), radish, spring onions, turnips, endive.

SEEDLINGS TO TRANSPLANT.

Cabbage (savoy), broccoli, celery, leek.

CROPS IN SEASON.

(The month in brackets represents the month of sowing).

Salads: Lettuce (June), radish (almost all the year round), tomatoes—outdoor (Sept.), cucumbers (late Sept.-Oct.).

Green Vegetables: Cabbage (Flower of Spring—in cold districts), beans (late Sept.-Oct.), spinach (July), silver beet (July), peas—dwarf (July).

Root Crops: Beetroot (Jan.-Feb. winter supply), carrots—early (early and short-horn varieties), parsnips (Aug.), turnips (Feb.-Mar. winter supply), swedes—spring (Aug.). Gourds: Squash—Warren (late Oct. in warm districts), Golden Hubbard and Green Hubbard (Nov.), pumpkin (Nov.).

high humidity, took a heavy toll of early-planted crops. The home gardener is therefore advised to do everything possible for the protection of his tomato crop.

The plants should be kept clear of all surplus growth, special attention being paid to the heavy laterals which shoot from the plant between the soil surface and where the two main stems are formed. Tying the plants, if necessary every ten inches, is the best means of protecting them against the damaging effects of high winds. In tying the plant the material being used should be made fast first to the stake, and, when encircling the plant, made to pass under a leaf and close to the main stem of the plant. Fastened in

this manner the plant will remain upright, and the lower bunch of fruit will be kept clear of the ground.

Spraying cannot profitably be neglected. Blight, caused by the fungus *Phytophthora infestans*, may wreck a crop before the disease is properly diagnosed. To protect the plants from being attacked, spray with Bordeaux mixture. After the disease appears it will be too late to spray. There is no known treatment which will restore the health and vigour of blighted plants.

Celery

Early set plants should by the middle of January be getting well forward. If

planted in trenches, drainage should be attended to so that surplus water will get away from the roots of the plants. As with tomatoes, applications of liquid manure after heavy watering will be beneficial and assist in maintaining growth towards maturity.

Double-row plantings as well as multiple-row beds require, to be blanched artificially, and this may be done by placing 12 x 1 inch boards close to the plants on the outside rows. The object of blanching is to remove the green colouring from the stems, and this is accomplished by the exclusion of light from that part of the plant shortly before maturity is reached. Clean waterproof paper may be used for wrapping individual plants. Plants grown in

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single rows may also be blanched by "banking" soil well up the stems; but no soil should be allowed to lodge in the centre growth.

Spraying with Bordeaux mixture for the prevention of blight, caused by the fungus *Septoria apii*, is necessary if the crop is to be preserved. It will be an advantage if late celery can be planted out as far as possible from growing carrots, particularly if there are indications of the presence of the carrot rust fly. Celery plants are subject to attack by this pest, and serious injury may result to the crop if this precaution is ignored.

Winter Green Crops

Plants of all varieties of vegetables for late autumn and winter maturity will no doubt have been set out in their permanent positions; but, if not, no time should be lost in attending to the planting. Puddling, or watering in, are the only safe methods to adopt when plants of these varieties are set out during January. Regular applications of insecticides—10-14 day intervals—must be made if the destructive activities of the various pests which affect the plants are to be combatted, prolonged spells of dry weather influence pest development, and when protective measures are adopted the heart of the plant should receive special attention.

Swede turnip tops should also receive some insecticidal treatment, as this crop suffers from the same pests as attack cabbages and cauliflowers.

Potatoes

To the home-gardener the recent shortage of potatoes for domestic use will now be only a memory—something to be quickly forgotten. The lesson, however, which may have been learned from the experience will no doubt have a stimulating effect on future production. Constituting as it does the principal vegetable of the daily dietary of the peoples of the allied nations, the potato has rightly been placed in a position of supreme and fully-warranted importance.

Late varieties, however, in most parts of the Dominion require special attention, and careful spraying with Bordeaux mixture will be the principal consideration. As with tomatoes, spray regularly to prevent attacks of blight. Keep the hoe going and always with a tendency to "bank" up the soil for the protection of the developing young tubers, and to assist the top growth to stand up against high winds.

Asparagus

Young beds, and beds on which cutting was stopped in December, should now receive manurial attention. They will be greatly benefited by a dressing of farmyard manure, a good handful of blood and bone manure to each crown, and as much dry wood ashes as can be spared. The latter will supply the necessary potash which is in

short supply and costly to purchase. These fertilisers should be applied as early as convenient and lightly forked into the soil. Deep digging may seriously injure the roots of the plants. Heavy manuring at the present time is necessary for high-quality production next season.

Rhubarb

Pulling stalks from summer varieties of rhubarb should not be continued after the middle of December. The manurial treatment recommended for asparagus will suit this crop admirably. Weed growth on both asparagus and rhubarb beds should never be permitted to develop, as it robs the roots of moisture and plant foods.

Silver Beet

Swiss Chard and Spinach Beet: This vegetable should be more extensively

grown than it has been. The large dark-coloured green leaves can be cooked and served like spinach, while the main white or cream-coloured ribs are cooked and served like asparagus. The plant is easily grown and will stand hot and cold weather conditions better than most vegetable varieties.

In northern districts seed may be sown almost any month of the year; in other locations from July to February. When sown in drills these should be 18-20 inches apart and the young plants thinned to 8-10 inches spacing in the row. The seed may also be sown in beds, and the plants when 4-5 inches high set at the above distances.

As a summer fertiliser superphosphate three parts and sulphate of ammonia one part—by weight—can be applied at the rate of 2 oz. per square

(Continued on page 367.)

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Silver Fern

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Seasonal Work for Beekeepers

The Honey Flow

TO secure a good surplus of honey from the main flow, which will occur during the months of December, January, and February according to location in New Zealand, an immune population of active vigorous young worker bees is essential in each hive when the main honey flow begins. Beekeepers will by this time know whether their colonies are in sufficient strength to store a good surplus of honey this season. Any colonies that do not comfortably fill two hive boxes, or, better, by the second week in December, are too weak to store a good surplus of honey this season.

The introduction of a young queen at this time will make very little difference to a weak colony so far as surplus honey production is concerned, as there is insufficient time to raise the necessary force of young bees to cope with the work immediately ahead. All such colonies spend the next six to nine weeks building up their strength in young bees when they should be hard at work storing a surplus of honey if they are to be of economic value to the beekeeper. They should not, therefore, be allowed to continue as separate unproductive units.

Under-strength Hives

To obtain the maximum return from poor colonies at this time of the year, a good plan is to make up a number of nucleus from half of the medium strength hives in the apiary by taking away the queen and one or two combs of brood with adhering bees. Place them about the apiary where they can be cared for and finally re-queened ready for next season's work. The remaining portion of these hives, all combs, brood and bees should then be united by the paper method to the balance of under-strength hives in the apiary. In this manner the united hives are brought up to full strength at the proper time, and will each store a good surplus of honey if conditions are favourable. Economy in labour and materials is also affected.

Uniting by Paper Method

Colonies of bees may be united by removing or killing the queen of one colony, and placing the complete brood nest, queen, and all the bees of another on top, with a single or double sheet of ordinary newspaper between. If the weather is good and there is a

honey flow at the time, a single sheet of paper will do. The bees in both hives placed together in this way quickly gnaw through the paper and unite peacefully as a single unit.

Supering

The economic use of supers is all important at this time of the year. There is a tendency in New Zealand for beekeepers to pile on the supers long before they are actually required. Where this happens, and queen excluders are not used, the bees gradually move upwards until the bottom box is not used for brood rearing; consequently one box to each hive containing nine or ten good bee combs is standing out in the apiary serving no useful purpose.

Measured in terms of labour and cash expenditure, the loss of accommodation for the bees in this manner is considerable, and very often means the difference between success or failure during difficult seasons. Beekeepers should therefore see that all bottom boxes are occupied and in use by the bees before adding supers.

Nectar Secretion

While the beekeeper must bring his bees up to full strength to coincide with the commencement of the main honey flow, he has no control over nectar secretion or the quantity that may be available to his bees. The principal external factors affecting nectar secretion in plants and trees are the soil, moisture, temperatures, and dryness. According to Lovell, soils affect nectar secretion only in their relation to vigour of plant growth. The drier the atmosphere the more concentrated will be the sugars in the nectar available. Probably the most important factor influencing nectar secretion is temperature. What may be an optimum range of temperatures for one plant may not be suitable for others. It is generally agreed, however, that cold or cool nights followed by warm days are better for nectar secretion than a uniform temperature.

—T. S. WINTER, Senior Apiary Instructor, Wellington.

Home Garden Notes—Continued from page 366

yard, and worked into the soil before planting. For later plantings, blood and bone manure may be substituted for the above mixture and applied at the rate of 3 oz. per square yard. Liquid manure applied at 10-14-day intervals will assist in stimulating the

plants towards development. Silver beet may be grown on any good garden soil, but a fairly heavy loam well supplied with organic manure will always produce a payable crop.

—D. K. PRITCHARD, Instructor in Vegetable Culture, Wellington.

Treating Bulbs For Sale

H.W. (MARLBOROUGH):—

Having a large number of *Lilium Regale* bulbs growing in my garden, I should be glad to know the best way of treating them for sale, as to whether they should be dug up and dried off or left in the ground till needed, as they seem to always have a lot of fleshy roots.

HORTICULTURE DIVISION:—

The bulbs should be lifted in autumn with basal roots intact, as soon as the flowers and foliage die down. While out of the ground they must be kept moist and replanted as soon as possible. To dry off the bulbs in any degree or to destroy the roots causes a serious check to growth.

Manures

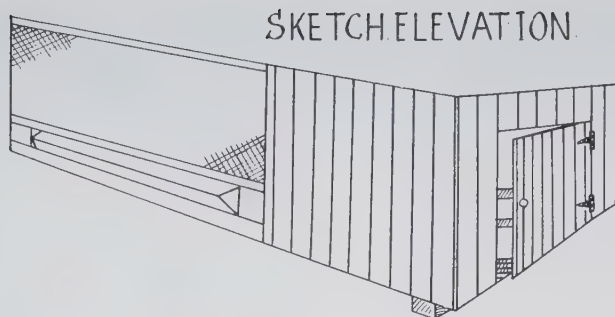
are vital to the success of your garden crop. A free bulletin on "Manures and Manuring for Garden Crops" may be obtained from the Department of Agriculture.

Don't

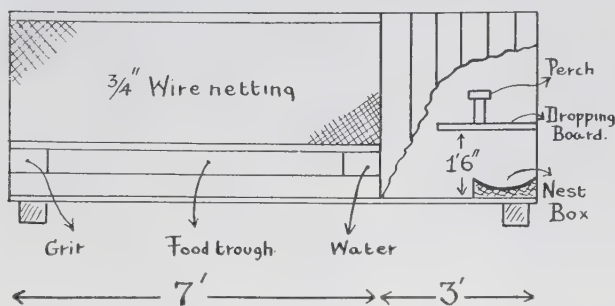
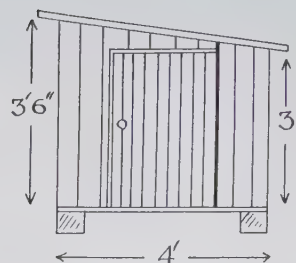
neglect disease and pests in the orchard. The Department of Agriculture will post you the free bulletin on the control of orchard diseases and pests by spraying.

Don't

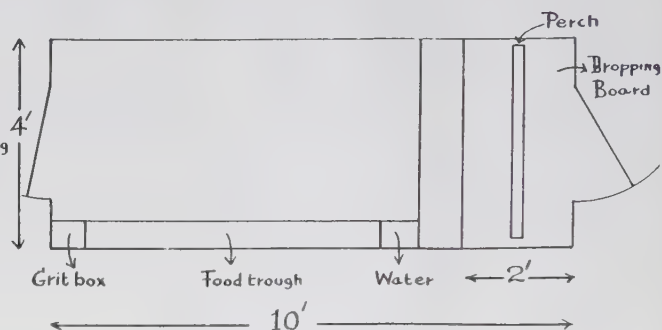
permit ashes from wood fires to be exposed to rain. These contain valuable potash which will be leached into the soil.



END ELEVATION.



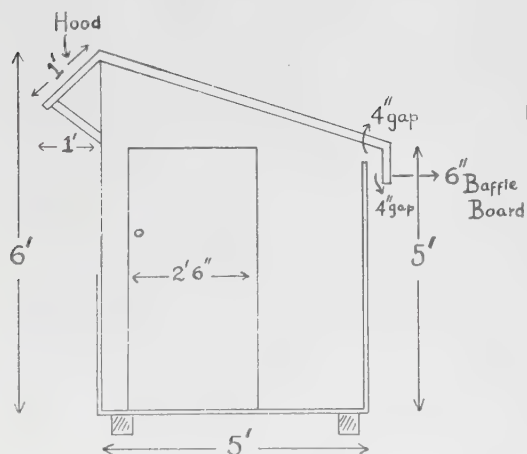
FRONT ELEVATION.



PLAN

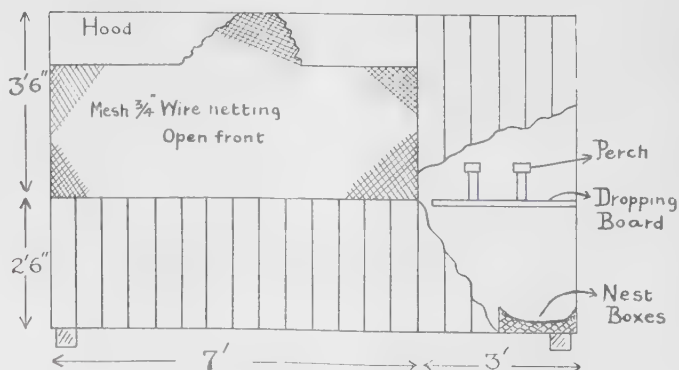
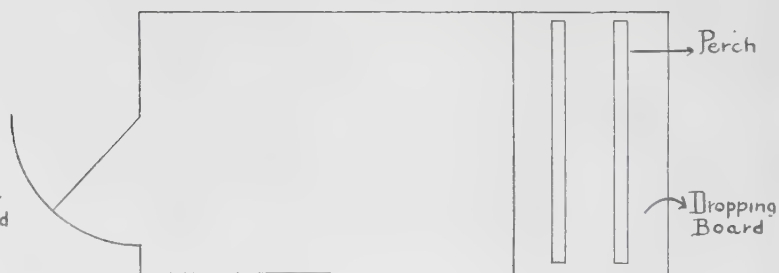
Back-yard Poultry House for 6 Birds.

PLAN.



END ELEVATION

Back-yard Poultry House.
for
12 Birds



FRONT ELEVATION

Notes for the Poultry Farmer

The Small Flock Poultry-keeper

EGGS have become a scarce food commodity in the main cities due to circumstances associated with the war. The natural reaction has been that those householders, who have locations where poultry may be kept, are taking steps to keep poultry, or if already in possession of small numbers, to increase their flocks. Such action is helping the egg position. Productive hens supply the needs of these householders, and consequently remove them as customers from the ordinary market. Any surplus above their daily needs may be preserved against the season when the birds are out of production, or alternatively may be marketed and so directly help the egg supply position. Small flocks—six, twelve, or eighteen birds—accumulatively can do much to ease the present-day shortage.

If a reason is necessary, that given above is ample justification for devoting this month's poultry notes to the benefit of the small flock poultry-keepers. Those starting for the first time have certain essential fundamentals to learn, while it may be stated without hesitation that, among those already possessed of small flocks, additional knowledge, properly applied in practice, will result in extra production and a more economical use of the poultry food now being fed to their birds. There is a need to stress these two points—eggs are urgently needed, while poultry food supplies are limited as compared with pre-war days.

Housing

The newcomer to poultry-keeping has several problems to solve, namely (a) housing; (b) purchase of stock; (c) management of these birds when they arrive. Accompanying these notes are diagrams of two types of house suitable for the small flock poultry-keeper. Owing to war requirements, building material is difficult to obtain today. For this reason the houses suggested have been designed with the smallest wire-netting requirements consistent with

By F. C. BOBBY,
Superintendent of Poultry
Husbandry, Wellington.

satisfactory poultry-housing. Furthermore, metal sheeting being almost unobtainable wooden roofs covered with roofing felt or corrugated asbestos sheeting must be considered. Many of these houses may be erected on sites comparatively near to dwelling houses, and the danger of harbouring rats must be given careful thought. If the house is to have a wooden floor, which type of floor is quite satisfactory, then it must be raised at least six inches above ground level. This ensures a dry floor for the poultry, and does not provide a comfortable and dry home for rats.

"Backyard Poultry-keeping"

With a view to helping the novice, and assisting further those householders with some experience, the Department of Agriculture has published a leaflet entitled, "Backyard Poultry-keeping." This leaflet should be obtained by all persons interested in small flock poultry-keeping, as it contains the essential fundamentals of practical poultry-keeping. Unfortunately, it has been necessary to restrict the information supplied in this leaflet to a bare minimum, since the present paper shortage will not permit of a full bulletin.

The problems already mentioned, namely, housing, stock and management, have, however, been adequately dealt with and additional information can always be obtained by writing to one of the Department's Poultry Instructors. Any reader, therefore, desiring to obtain a copy of this leaflet should write to their Poultry Instructor, care of Department of Agriculture at Auckland, Wellington, Christchurch or Dunedin, and enclose three penny stamps, this being the amount charged for the leaflet under discussion.

Purchasing Stock

A word of warning to those wishing to start poultry-keeping, and also to

Don't

neglect early spring cabbage plants. For slugs and snails use burnt lime freely. It is best applied in the evening.

those intending to add some 1942-hatched pullets to their flocks. There has been a big demand for pullets hatched this season, and many commercial poultry-keepers are already completely booked up with orders. If, therefore, pullets have not already been booked there is an urgent necessity for immediate action in this matter. Should all efforts to obtain pullets fail, write to the nearest Poultry Instructor, who may be able to supply the names and addresses of poultry-keepers still possessing pullets for sale.

Remember that successful egg-production depends upon good healthy stock, consistent attention to details of management, and an adequate knowledge of how to feed. One last word—if eggs surplus to the household requirements are produced, the leaflet "Backyard Poultry-keeping," gives instructions as to how these may be marketed without undue trouble, while still conforming with the Marketing Regulations in force in the four main cities of the Dominion. Help yourself and the Dominion by producing eggs during the next laying season, which starts early in the New Year.

Coccidiosis of Poultry

Coccidiosis is one of the most destructive diseases of poultry, and is probably the most prevalent infectious disease attacking poultry in New Zealand. This disease has been reported from many districts in both islands and the annual loss among infected birds is heavy.

It is, therefore, of considerable importance that poultry keepers should be able to recognise an outbreak of coccidiosis and to know what steps to take to bring such an outbreak under control.

Every poultrykeeper should write to the Department of Agriculture for a free copy of Bulletin No. 22, "Coccidiosis of Poultry."

Don't

allow fowl manure to get wet. It becomes sticky and unworkable, and, in addition, loses much of its valuable plant food. Keep it in a dry shed and occasionally mix it with two or three handfuls of superphosphate.

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Federation of Young Farmers' Clubs

An Open Letter to Y.F.C. Members Overseas

Fellow Members Overseas,—

The members of all units of the N.Z. Federation of Young Farmers' Clubs join in sending you greetings, and an assurance of their pride in your achievements and their gratitude for the great fight that you have put up for freedom and democracy.

You will doubtless be pleased to know that we, on the 'Home Front,' are making every effort to maintain the Y.F.C. movement. To that end we are carrying on with the organisation, and though, through depletion of member-

ship and difficulties such as petrol and tyre restrictions, a number of clubs have been forced to go into "recess" for the duration of the war, we have close on seventy active clubs still going strong. Many new members from among the "under eighteens" have been enrolled, and with their help and with the assistance of the honorary and advisory members, we are convinced that we can hold these clubs. Activities generally are of necessity curtailed, but every endeavour is being made to fulfil the promise

given to all of you that your own organisation will be kept going while you are overseas fighting for your country.

We wish you all the best of luck; and with the certainty in our hearts that your successes and those of our Allies will continue, we are making ready to greet you on your return, as individuals, and as members of the organisation of which we all have reason to be proud—the Young Farmers' Clubs of New Zealand.

Wellington Council Meeting

A MEETING of the Wellington Council was held at Palmerston North on Thursday, November 5, delegates present including Messrs. S. G. Avery (chairman), W. James, V. C. Lewis, H. J. Lancaster, R. M. Law, W. M. Benson, C. J. Craig, and B. J. Collerton. Messrs. D. S. Ross (Dominion President) and S. Freeman (Dominion Organising Secretary) were present by invitation.

The annual general meeting of the federation was discussed and business carried out and resolutions passed thereat were commented on by delegates who had attended. The meeting was unanimous in upholding the policy of the Federation particularly so far as concerned its determination to make every effort to carry on.

Delegates' reports revealed the number of clubs still active in the various districts to be as follows: Wanganui 4, Manawatu 4, Horowhenua 1, Wairarapa 3, Southern Hawke's Bay 1, Central Hawke's Bay 3, Northern Hawke's Bay 3; a total of 19. The clubs in the Taranaki district and in Poverty Bay were all in recess for the duration of the war.

The matter of clubs and their activities was discussed and it was suggested that one of the greatest difficulties to contend with was the dearth of lecturers caused mainly by transport restrictions. It was not an easy matter to retain the interest of members, many of whom were under eighteen years of age; difficulty was experienced in relying on members entirely for discussions and talks.

Mr. Ross spoke regarding the organisation as a whole; he recognised that under existing conditions problems must, of necessity, become more acute. He stressed the educational aims of the movement, and urged that every endeavour should be made to carry on. The Federation's policy had been framed from time to time to meet the circumstances, and at present it was left more and more to the clubs themselves, to devise ways and means to suit their particular conditions. He believed that if members were encouraged they could and would overcome most of their difficulties, especially in regard to the scarcity of lecturers. This had been accomplished in his own district (Bay of Plenty), and in many others; every avenue was explored so far as lecturers from among farmers, business men and others were concerned, and starting among members in a small way, by means of talks, papers,

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discussions and debates, some particularly good speakers had been brought forward, and confidence instilled into many others.

Policy must change with altered circumstances; clubs would, of a certainty, lose more members—but younger members should be brought in and catered for. He considered that there was still a job for district committees to do, and stressed that these bodies should realise their responsibilities and act up to them. It was obvious to him that some committees were not functioning, and suggested a "drive" amongst them in the autumn; he would be willing to give his assistance if a suitable itinerary could be arranged. He maintained that the movement was too valuable to allow to "slide"; through district committees it should still be possible to arrange field days during autumn and winter; debating

and lectures should be encouraged, while the social side was of value in holding the clubs together.

It was suggested by delegates that in some rural areas there were not many young lads available, but it was felt that something could be accomplished by means of a "drive" in the secondary schools. It was considered that the agricultural classes in district high schools offered scope for the formation of clubs such as were functioning at Ashburton and in the Bay of Plenty. It was also suggested that clubs individually should get in touch with schoolmasters and ascertain what lads were shortly leaving school; if the clubs were to be successfully maintained it would be necessary to recruit as many of these lads as possible. It was agreed that a campaign be conducted in the autumn through the district committees and that advantage be taken of the offer of assistance by Mr. Ross.

The chairman drew attention to the fact that, in connection with the Y.F.C. radio session from Station 2ZA Palmerston North, Mr. W. J. Croucher had kindly "filled the breach" by presenting a series of weekly talks entitled "Farming Through the Years"; these talks were broadcast every Tuesday evening at 8.30 p.m., four talks having already been given. A motion was carried sincerely thanking Mr. Croucher for his efforts in successfully maintaining the Y.F.C. talks from Station 2ZA.

Delegates were selected to attend the forthcoming Dominion Executive Committee meeting in Wellington: Messrs. S. G. Avery (chairman) ex officio, W. F. McLaren, B. J. Collerton, McGregor Donald; in the event of Mr. Donald being unable to attend, Mr. V. C. Lewis offered to substitute.

Otago-Southland Council Meeting

A MEETING of the Otago-Southland Council was held at Invercargill on Friday, August 28. Those present included Messrs. R. J. Reid (chairman), W. R. Harris, A. Stuart, L. Harbord (Invercargill), J. Middlemiss, K. J. Hargest, A. S. Trotter (Wood-

lands), T. A. McKenzie (Thornbury), H. S. Young (Orepuki), M. Thwaites, K. D. Townley, E. Rabbidge (Wyndham), S. D. Blomfield (Gore), J. W. Wilson, and the hon. secretary, S. R. Whyte (Dunedin).

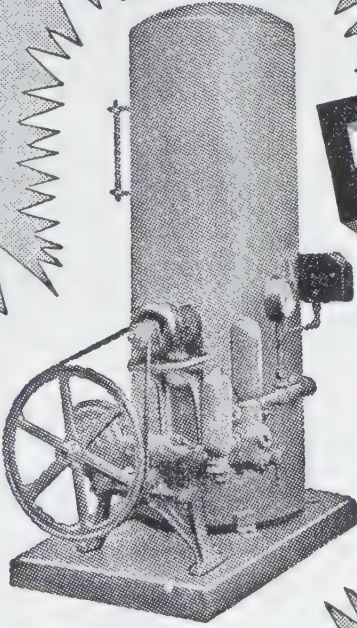
Among matters discussed were re-

ports on the annual general meeting of the federation held in Dunedin on July 1. These reports indicated that there was ample evidence of sustained interest in the Y.F.C. movement, not only from the representative attendance but from the excellence of the discussions which took place at the meeting.

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JA

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The main business of the council meeting dealt with the report of a sub-committee set up to devise ways and means of implementing a resolution carried at the annual general meeting. Mr. A. C. Cameron, on behalf of the Otago-Southland Council, had brought forward the following remit, which, after a full discussion by the meeting was carried unanimously:—

"That, recognising the national importance of the farming community making its full contribution to the leadership and development of this Dominion, this conference urges all Young Farmers' Club councils, district committees and clubs to do their part towards developing the qualities in the individual so essential if this aim is to be achieved."

The annual general meeting had appointed Messrs. A. C. Cameron (convenor), R. J. Reid, S. A. La Roche, A. C. Leary and S. R. Whyte as a sub-committee. The council chairman, Mr. R. J. Reid, in instructing the hon. secretary to read the report, stated that while there might be some doubts as to whether the time was opportune for going ahead with such an important

subject, it was worth while not only from the point of view of those club members who were not in the forces, but it would let the members serving overseas realise that the original aims and objects of the Y.F.C. movement were being kept well to the fore; in addition it would be an ideal post-war objective to endeavour to encourage the development of leadership amongst club members.

The secretary then read the report and enlarged on any points requiring amplification. Discussion followed, in which most delegates took part, and were unanimous in congratulating the sub-committee on their work, and were of the opinion that so much was involved that it would scarcely be fair to attempt to reach any definite conclusions at that stage. A point arising out of the discussion was the necessity for guidance in the conduct of meet-

ings; although the essential rules had been circulated at some time to all clubs, it was felt that in many cases these had been filed away, and that new chairmen coming into office either did not know of their existence or have access to them. It was suggested that rules for the conduct of meetings should be included in the syllabus proposed in the report, and that in addition the subject should be set down in the programme of every club for one meeting in each year. The report was approved and instructions given for it to be submitted to the next meeting of the Dominion Executive Committee.

The Western Southland District Committee was congratulated on the success of its recent district field day, which it was considered would do much to maintain the interest in club work.

Wairarapa District Committee

THE attendance at the recent meeting of the Wairarapa District Committee included Messrs. W. James (chairman), W. F. McLaren, N. Blatchford, G. E. Allen, H. Bennett, H. McKenzie, W. D. Buick, J. Rose, H. Bibby, and N. Lamont. The main business was a discussion of the resolution carried at the Annual General Meeting of the Federation, recommending that every encouragement should be given to clubs to continue their activities to the fullest extent permitted by present conditions. Members generally felt that the lead given by the Federation should be followed.

Consideration was given to the prospects of clubs in the Wairarapa being able to carry on, and it was definitely stated that more or less regular meetings could be held; the greatest difficulty, however, was that of obtaining lecturers. It was also felt that with some members the petrol restriction was the excuse rather than the reason for non-attendance at meetings. Suggestions were made regarding the utilisation of townspeople, professional men and others, and a number of possibilities were discussed with a view to maintaining the organisation. There are still three active clubs in the Wairarapa district.

Reports on Club Activities

SOUTH OTAGO

Warepa.—General discussion on the subject of "Linen Flax," led by Mr. A. F. Greenall, Department of Agriculture, involving questions and answers, and a pooling of all the knowledge those present had acquired during their comparatively short association with the growing and handling of linen flax. Some very valuable information was brought to light. This discussion was followed by a similar one dealing with "Mole-draining," which practice it was definitely agreed had been responsible for vast improvement to most farmlands in the Warepa district. There was an attendance of ten members out of a total membership of nineteen.

NORTH OTAGO

Enfield.—An interesting talk was given by Mr. J. D. McLeod on "Procedure at a Business Meeting." The speaker dealt at length with the various problems raised by members, and detailed the duties of the office-bearers. He emphasised that the duties of the chairman were governed by sound commonsense in his interpretation of the rules laid down for his guidance. There were twelve members present out of a membership of twenty.

SOUTH CANTERBURY

Geraldine.—General business discussions. A farewell presentation to two club members

going overseas. Talk by Mr. Little on "Farming in the Fen Country of England." At the previous meeting a deputation was received from the local adherents of the "Campaign for Christian Order," at which four club members spoke. This club is carrying on successfully with a membership of twelve.

Waihaorunga.—Talk by Mr. C. C. Leitch, Department of Agriculture, on "The Improvement of Pasture Lands." The speaker stressed the value of certified seeds, ryegrass and clovers, and answered many questions. There were seventeen members present out of a membership of nineteen.

NELSON

Murchison.—Decided to hold practice dog trials in preparation for a proper dog trial at some future date. The first practice trial to be held on Mr. Downies farm, Six Mile, Murchison. Mr. Manson, a local dog trial enthusiast who has had years of experience, attended the meeting and gave some very useful information. There was an attendance of twenty members out of a membership of twenty-four.

HOROWHENUA

Levin.—Recent meetings included a talk by Mr. G. Wilson on "Ploughing and General Preparation of the Ground for Crops," and an exhibition of films by Mr. G. H. Dawick, Secretary of the N.Z. Jersey Cattle Breeders' As-

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Beggs, J. F.	.. Thornbury
Bell, A.	.. Roxburgh
Bennett, D.	.. Opotiki
Bennett, Geo.	.. Opotiki
Bowler, G.	.. Roxburgh
Brown, C. J.	.. Orepuki
Brown, D. M.	.. Orepuki
Brown, L. H.	.. Orepuki
Carmichael, G.	.. Thornbury
Clark, B.	.. Opotiki
Clark, D. J.	.. Drummond
Clark, T.	.. Opotiki
Clay, F. C.	.. Wyndham
Collie, A.†	.. Thornbury
Croft, H.	.. Dipton
Dolamore, F. J.	.. Woodlands
Dunlay, M.	.. Roxburgh
Fallow, G. O.	.. Thornbury
Fallow, J. C.	.. Thornbury
Fallow, J. T. D.	.. Thornbury
Fisher, P.	.. Opotiki
Forbes, A. R.§	.. Lochiel
George, L.*	.. Roxburgh

Club.

Gilchrist, A.*	.. Roxburgh
Hamilton, N.	.. Thornbury
Hillis, I.	.. Thornbury
Hubber, J. R.	.. Drummond
Johnstone, T.	.. Drummond
Lee, A.*	.. Thornbury
Leith, M. L.	.. Thornbury
Lindsay, F.	.. Drummond
McCracken, C. A.	.. Edgumbe
McLean, J. L.†	.. Thornbury
Matchett, W. S.	.. Thornbury
Miller, A.	.. Thornbury
Miller, G.†	.. Dipton
Murray, J.	.. Opotiki
Omond, L.	.. Roxburgh
Pankhurst, C. G.	.. Thornbury
Perfect, W.	.. Opotiki
Ouale, W. J.	.. Lochiel
Rance, D.	.. Thornbury
Rance, W. H.	.. Thornbury
Robertson, C. J.	.. Drummond
Robertson, F.	.. Drummond
Stewart, H. N.*	.. Drummond

Name.

Name.

Club.

Stuart, R.	.. Opotiki
Stuck, G.	.. Orepuki
Sutton, C. M.†	.. Drummond
Teviotdale, D.	.. Thornbury
Todd, T.	.. Wyndham
Turner, T.	.. Thornbury

AIR FORCE.

Crang, E. J.	.. Edgumbe
Dillon, S. I.	.. Orepuki
Dowle, W. M.	.. Roxburgh
Gilmore, B.	.. Opotiki
Helm, G. V.	.. Dipton
McLean, A.	.. Drummond
McLeish, C. C.	.. Drummond
McPhail, A.	.. Roxburgh
McPherson, A. J.	.. Orepuki
McPherson, W.	.. Roxburgh
Stuart, R.*	.. Thornbury
Stuart, W. D.*	.. Thornbury

NAVY.

Gardner, E. McK.	Scargill-Omihi
George, D.	.. Roxburgh
McCracken, A.	.. Edgumbe
McKenzie, K. E.	.. Thornbury
Martin, J.	.. Roxburgh
Waterhouse, B. M.	Orepuki

* Killed in action.

† Prisoner of war.

§ Wounded.

sociation. At the latter meeting members of the Junior branch of the W.D.F.U. attended to see the films. At the last meeting reported, on the conclusion of business, friends and members of the Junior W.D.F.U. joined the meeting, the remainder of the evening being taken up by a complimentary dance in honour of the club president's approaching marriage. This club has recently enrolled four new members, and is successfully carrying on with a roll call of about thirty.

MANAWATU

Rongotea.—Decided to postpone the usual "Parents and Friends" evening till a later date, on account of local activities and also petrol restrictions. Mr. H. J. Lancaster gave an interesting and instructive address on "What We Owe to the Dairy Cow." This club has a membership of twenty.

WAIRARAPA

Alfredton.—Owing to the busy season it was decided as a temporary measure to hold the club meetings over until after shearing. Im-

promptu talks were given by members present on various farm topics. This club is carrying on with a membership of fourteen.

Carterton.—Report given of the recent meeting of the Wairarapa District Executive Committee. Talk by Mr. W. Campin, Jun., a club member, entitled "Breed, Feed, and Weed." Eighteen members were in attendance out of a total membership of twenty-two.

NORTHERN HAWKE'S BAY

Meeanee.—Nine present out of a membership of sixteen. A general discussion was held on the matter of the suggestion that the club go into recess for the duration of the war. The decision was very definitely in favour of carrying on in spite of difficulties and hardships. A lecture was given by Mr. E. J. Callaghan, Government Veterinarian, Hastings, on "Seasonal Illnesses of Dairy Stock"; among other matters the speaker dealt with such troubles as milk fever, detailing its causes and remedies; and grass staggers, symptoms and remedies. In connection with all these troubles he stressed

that "prevention is better than cure." At a later meeting the evening took the form of a general discussion in which each member spoke for four minutes on something connected with farm-life, an experience, or something of interest that he had seen, the rest of the members entering into the discussion. This form of meeting proved very interesting and successful.

BAY OF PLENTY

Paengaroa.—General business. Two members enrolled. Arrangements to be made for the club's annual dance, which it was decided to hold round about the New Year. This club has an active membership of thirty-five.

Whakatane D.H.S.—Demonstration by Mr. J. R. Murray, Department of Agriculture, on how to plant grass seed mixtures. The speaker dealt with both permanent and temporary pastures and stressed the value of certified seed. Mr. Ryde gave a very interesting lecture on the planting and care of maize. There was an attendance of 19 out of a membership of 19.

Health Notes for the Farm

Do You Get That "Tired Feeling"?

WITH people generally becoming more diet-conscious, the question of food and food values in relation to human welfare has become very important. The discovery of the family of vitamins within comparatively recent years has given science a new approach to the problem of nutrition, and continuous and intensive research in this hitherto unexplored field is revealing facts of incalculable value. And these research workers are never satisfied.

As an example of how they probe after facts, a rather curious and interesting experiment was carried out recently by a group of American doctors. Among the vitamins which are so essential to our physical well-being is an important one labelled B-1. This vitamin B-1 is necessary for the proper functioning of our body cells. It is constantly draining away from us, and it has constantly to be renewed if our cells are to work efficiently.

Now, these men decided to see what happened to them when they didn't get enough vitamin B-1. They went on a diet of a certain quantity of each of the following: Meat, vegetables, polished rice, macaroni, white bread, butter, honey, and some fruit. That sounds much like an average diet, but it con-

Contributed by the
DEPARTMENT OF HEALTH.

tained no oatmeal and no wheatmeal. In all, they were getting only half the quantity of vitamin B-1 necessary to keep them free from symptoms. In a few days they began to feel tired, lose their appetite, get constipated, and suffer from consequences which were of definite medical interest—simply because they were not getting enough vitamin B-1.

Common Symptoms

These symptoms are of everyday occurrence among New Zealanders, perhaps not to the same degree as was revealed in this experiment—but next time you think of it, just notice how many people complain of that "tired feeling." Research in this country has indicated that vitamin B-1 is undoubtedly short in our daily food. It is not so short as to make us ill, for where this vitamin is grossly deficient there occurs a type of neuritis that is not common in New Zealand except among those who are heavy drinkers.

An important and palatable source of this vitamin is wholemeal bread. Some people regard wholemeal bread as a fad. It is not a fad. It has certain scientifically-proved health-giving advantages over the refined white bread. In addition to this body building vitamin, wholemeal bread is rich in iron which is needed to make healthy red blood, and also is more easily digested.

In the light of recently-discovered truths about diet, changes in food habits must come about. Already these developments have made widespread changes in medical complaints. For instance, one need only point to the total disappearance of green sickness in young women during the last few decades, and to the marked reduction in the number of cases of stone in the bladder and kidneys, since the use of green vegetables and other sources of vitamin A became more prevalent among the poorer classes in England.

Vitamin B-1 Essential

Many experts are convinced that long-continued shortage of the small but important constituent of unrefined foods—our good friend vitamin B-1—will lead to a state of sub-optimal health, which keeps you below par, and may lay you open to the risk of a real illness.

Vitamin B-1 is valuable also for its effect upon the appetite of children. If a mother is having difficulty because of her child's lack of appetite, she will often find if she gives it a tablespoonful of wheat germ, which is rich in this vitamin, the child's appetite will improve and its weight increase.

If you're feeling out of sorts, try a heaped tablespoonful of wheat germ as an addition to your diet—sprinkle it on fruit or over your porridge.

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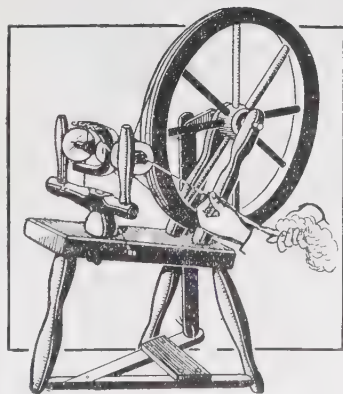
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THE

Good Neighbour

BY MARY

From Me To You

SO it is almost Christmas again! It seems only the other day I was wishing you all the joyous wish for last Christmas, and now, almost too soon, we are at the end of another year, and here I am, wishing you once again the old, old wish "A Merry Christmas." Even under wartime conditions, there is still the delightful air of romance about Christmas—the shops are full of toys for the kiddies, and every now and then we see the smiling face of Santa Claus greeting us from some coloured advertisement. No matter what may happen to the rest of the world, so long as there are children in our midst we will always celebrate Christmas with the same joy as was done in days of old. There is a verse by Kathleen Tynan that is a special favourite of mine, and I would like to share it with you today: it is called "By the Crib."

"Lions and tigers
Knelt in the door,
Their wrath forgotten,
And their warfare o'er.
The wren and robin
Came hopping in,
And the snake came wriggling
With his spotted skin.
There were kings and shepherds
And the sheepdog came,
The ass and oxen,
And a new-born lamb.
The small child-angels,
Like golden bees,
Were winging and singing
A song of peace."

I hope that your Christmas of this year is happier than your Christmas of last year. So many things have happened during the last twelve months, many of them sad, and many of them glad, but I believe that already the world has turned the corner leading to a happier era, and that the year ahead is going to be a straight road leading to all the happiness and joy you are longing for so much. Does the thought of a New Year ahead thrill you as it does me? I love the delightful feeling of anticipation that

comes with the New Year—there is never any knowing what lies ahead down the new days that are ours for the taking. Do you know these words written by Edward Sill? They are not very well known, but how I like them!

"The years monotonous? The same old seasons, and weathers and aspects of nature? Never anything new to admire or wonder at? The monotony is in our eyesight, which goes on seeing nothing but the common and invariable things; simply because from long familiarity these are the easy things to see. But these are only the frame of the picture: the picture itself is never twice alike."

And so, as the years go on, we may find ourselves doing the same tasks day

in and day out—and perhaps they do become a trifle monotonous too—but live fully each day as it comes, take only one day at a time, and remember that the years are made up of days—it is up to you to see that the days make the years memorable. Emerson wrote: "Write on your hearts that every day is the best day of the year." It is a grand and noble thought to live up to, and coupled with my wish for a happy Christmas, with heaps of fun and happiness, I leave with you the wish that every day of next year will be a glad day, and the year itself a memorable one.

Mary

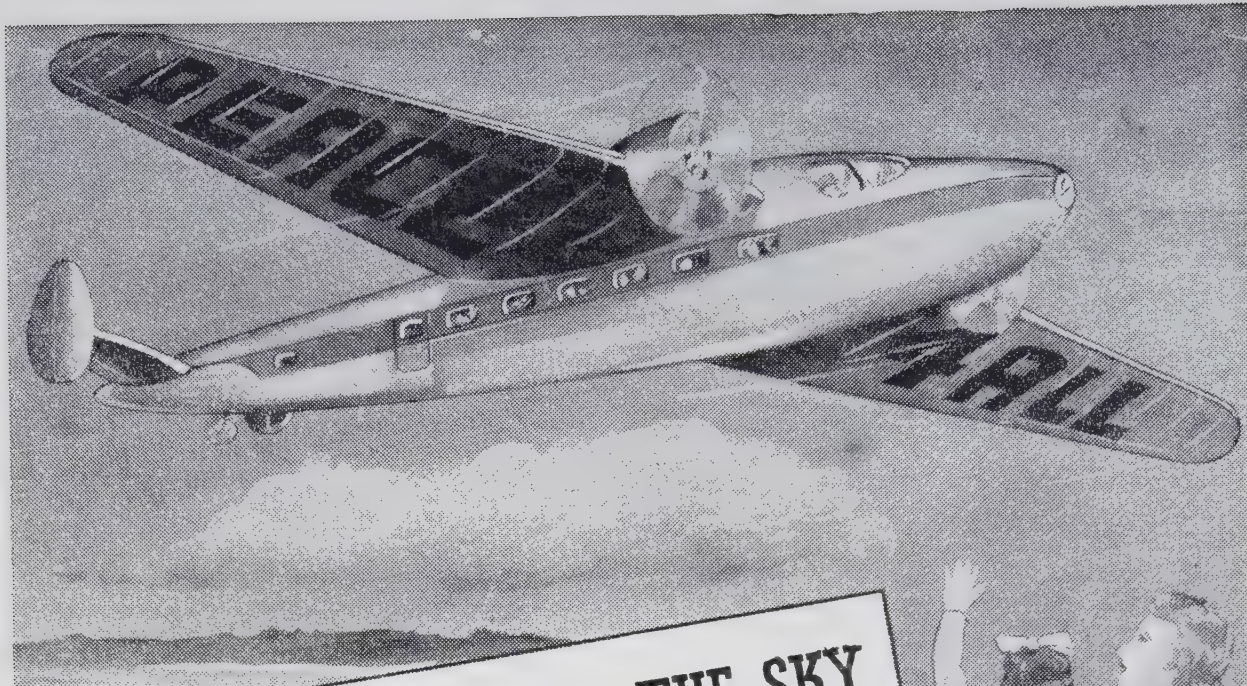
Mary's "At Home"

I FEEL like starting this letter with a "Hip hooray," the same as my winning competition entry. Needless to say I was very pleased when I heard I had won, and when I told the good news to himself he said "Good-o! We'll be able to pay off the mortgage now!" I must leave the ideas of a dream cowshed to others—an attempt in that direction might make our own deficiencies too glaring.—Brymawr, Aramoho.

WHAT a wonderful week this past week has been with the news of our victories on three fronts. The good tidings began for us with word that a very dear friend who had been reported missing for three months was a prisoner of war. It was a glad relief to know he was alive, and I am sure that God's protection that brought him back from Greece after being left behind, and from Crete by the Royal Navy after the blitz there, will remain

with him in the ordeal of being a prisoner. I think that to always keep one's faith in God's goodness, and love for His individual children turns the darkest of days into days of hope. And I truly believe too that we help our friends and loved ones to benefit by His help by firmly believing He will have them in His keeping. This thought I would like to pass on to anxious ones, for some almost despair at times.

This week my son celebrated his tenth birthday, and we, like you, always treat these days as special ones, and the celebrant's own day. His father presented him with an axe, because he is now "half a man." And the young man's delight at his promotion was reflected in a lovely box of stove wood for Mother. As he is usually a conscientious little boy, I see good times ahead for me, so long as his enthusiasm is not too damped by this being made too much into a regular

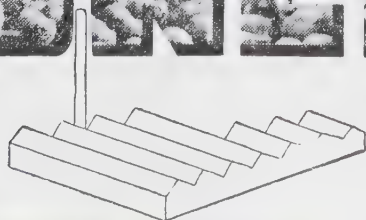


WHEN *peace* RIDES THE SKY



When to-day's bomber becomes to-morrow's luxury liner of the air, peace and plenty will return to the earth. Until then it is our civilian duty to do without. To-day the Onehunga Mills are weaving for war, for the men who deserve the best in rest and relaxation. If you cannot buy your full requirements of Onehunga blankets, remember that the day will surely come when they will return to active service in your home, to provide you once again with peaceful sleep.

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RUGS — ONEHUNGA WOOLLENS.

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job. Parents can so easily destroy a child's enthusiasm I think by forgetting that they haven't the staying interest in things that adults have developed. That will come by and by so long as they are taught that a job once begun should be completed. I do hope you are enjoying the excitement of winning battles as we are. Though isn't it strange how restrained we are apt to become over good news?—**Tiggety Boo, Kati Kati.**

RECENTLY my cousin showed me a small piece of wool which had been given to her. This wool was homespun by a young lady amateur, and it was so evenly done that it was a credit to her. I have seen wool homespun by a woman with a lifetime's experience in this type of work, and it was irregular, knotty in places, and wiry to feel, but not so the wool spun by this young woman. It was as soft as anyone would wish it to be, so she must be congratulated on her achievement. It did not take her very long to learn the art.—**Jubilee, Southland.**

BEFORE I came to the country I worked as a floriste, and had many an unusual experience. One day I had an order for an expensive wreath to be delivered to a given address, with the card expressing the sender's deepest sympathy. Knowing there had been no illness in the house. I was rather anxious, and on arrival was very surprised to learn that their dog, a great family pet, had died, and the elaborate funeral was just about to commence. Rather a unique way of friends expressing sympathy for the loss of a pet.—**Kahikatea, Marton.**

DOESN'T it seem a shock to realise that next month is the last month in the year? I suppose Christmas will be very quietly celebrated this year, but still, Christmas is always Christmas, and the gay cards and other little odds and ends are already helping to fill up the emptiness of show cases and bins. A huge mob of cattle has just gone past, and it seems like a page out of the past to see so many cattle being driven again, and by the look of the drover's mount, there is still some good horse flesh about. Do you like horses, Mary? I have been planting out necessities—lettuces, tomatoes, etc., and hope for good results. And I have two batches of perky little chicks out too! Well, well, I hear you say, what a farmyard! We have had wind here lately that would do Wellington justice, and anything that dares to grow more than two inches high has been made to bend low.—**M., Feilding.**

I HAVE just finished reading a book called "It Happened in Palestine." There was one chapter that appealed to me very much, and that was where the writer was pointing out that the people who carry the weeds of resent-

ment in them should pluck them out, and turn their minds into a garden of flowers. Don't you think that is a good way of expressing it? If you have not already read this book, Mary, I think it would appeal to you.—**C.E.T., Hawera.**

IF you want to know a little about me, here you are. I am just a plain Jane, fair hair turning grey, since the half century mark has been passed, mother of three children, five feet tall or short, very thin and wiry. I was born in England, but have lived in New Zealand since 1919, and I am interested in all doings of women, good books, gardening, farming, children, and animals. I believe in soil management and compost, also in food values. Yes, I even dabble in politics, but war is my major concern just now. Memory takes me back to the England I knew years ago. I saw the old age pension benefits which did away with a 2s 6d and one loaf weekly allowance, and allowed our dear old folk to exist on a better footing; factory laws which forbade child labour, health laws which really aimed at better living conditions, the Great War, and women's entry into a life hitherto unknown to them. Peace brought changes to many, as almost everyone desired to get away. And many like myself crossed the oceans to settle amongst strangers. This was a big step, to start a new life amongst new surroundings and conditions, to have to adapt oneself to anything—but it certainly made for variety if nothing more.—**Susannah, Waikato.**

WITH so many of our friends away, most of them overseas, our thoughts naturally turn to them often and often. I would like to share with you a Prayer for Friends which is a favourite of mine, and which I feel

sure many of your readers will enjoy as I have done. "Gracious Lord, of whose gift comes the love of friends, we praise Thee for all the riches of friendship; for the differences in our friends which meet and satisfy different parts of our nature; for their understanding of us, their cheer and ready sympathy. O Thou, who hast given us to each other, we praise Thee that our love comes of Thee, and that together we are Thine. Strengthen and deepen all our friendships as we walk ever more closely with Thee, the perfect Friend, through Jesus Christ, our Lord. Amen."—**Pigtails, Wellington.**



Rosemary Lane, Columbia starlet, is ready for summer in her new outfit—with a crisp white cotton blouse she wears a full skirt of rough cotton in a brilliant, bizarre print, ideal for playtime or holidays.

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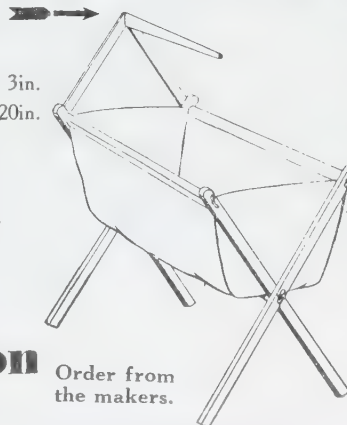
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Our Competition

My Dream Cowshed

YOU certainly let your imagination run riot over this subject, and most of you would need a King Midas purse to make your dreams come true. But there were lots of good points in the entries, and I am sure you will agree that "Susannah's" idea of a dream cowshed would be a real delight if her dream was ever realised. Second prize goes to "Tigty Boo," of Kati Kati. I do hope that after reading these entries you are not discontented with your own cowsheds though!

First Prize

THE whole cowshed will be concrete, rough cast outside, with orange coloured tile roof. The inside will be white and glazed, with all woodwork enamelled deep cream. If possible I would not have very much woodwork, and would use chromium in its place. The rails and dummy bails would be chromium plated, with an automatic chromium stool which would swing to and fro as one wished. The handles to the bail doors would be dispensed with, and a press button would control the opening and shutting of doors. The automatic teat washer would also become a floor washer should the latter become soiled during milking. The floor would be smooth coloured concrete, just smooth enough to be safe for workers and cows. A good shelter would afford protection from the bad weather, and keep it cool in the hot weather.

The separator room would be like the cowshed, with an automatic washer for the separator and machine parts. The bench and all possible parts would be chromium. A special ice plant would keep the cream cool, and an automatic lift would carry the cream cans when full on to the lorry. A medicine chest fully stocked and labelled would be there, also facilities for making a cup of tea.

But the most important item of my dream cowshed would be a sickroom for the cows which could be heated or cooled as desired, where all feeds could be prepared, and dressings, etc., done under perfect hygienic conditions. I would have a drinking fountain for the cows, and the yard would be washed by water from a perforated pipe. The yard rails and gates would be cream enamel, and the gates would be controlled in the same way as the doors. Dream cowshed did I hear you say? Why, of course!—**Susannah, Waikato.**

Second Prize

FIRST of all the right situation. Not on the top of a hill, or in a hollow necessitating at least one daily climb, but a spot out of the prevailing winds

on reasonably flat ground. There I'd build my cowshed, well made and finished. Two concrete yards behind with sufficient slope to ensure good drainage and easy cleaning, and one in front with a four-foot race leading away from it. This would prevent the tramping up of mud in the vicinity. I would have the shed built so that the hot sun would not stream in relentlessly on busy milkers during morning and afternoon in the summer months. Most important of all, the machinery would be so arranged and guarded that

I Believe. . . .

I believe in laughter
That sometimes covers tears;
I believe in love that lasts
And deepens through the years.
I believe in beauty
In all created things—
A budding flower, a starlit night,
A bird on soaring wings;
I believe in friendships
That stand the test of time,
Believing all these things, I must
Believe God's love sublime.

no child or unwary person could become easily entangled. There would be heaps of water from an all-the-year-round reliable source, and carefully planned drainage would take all the water used for cleaning, etc., right away from where the milk and cream would stand.

Now for the inside of the shed. This I would have painted cream all round the top half with the lower concrete walls finished in dark green. With hoses placed handy to each set of bails, these walls, together with dummies in green, could be kept clean without showing the usual stains of lighter paints. At the top of each dummy, a shallow trough would be built to contain licks. This often encourages an animal to take it and keeps a fidgety cow occupied. I would instal the best machinery and tinware I could buy so that the installations would retain their polish and brightness as long as possible. There would need to be a really good hot water supply in the dairy, which would be roomy enough to allow of work in comfort. A hot



Christmas morning! Shirley Temple, of Metro-Goldwyn-Mayer fame, is a mighty curious little girl, and can hardly wait for morning to come before she explores her bulging Christmas stocking.

and cold tap over the bench, which would be the right height for washing up, and big windows to let in plenty of light would make things easier. A small built-in cupboard for medicines and two drawers to keep the clean towels and cloths in would make for cleanliness. Dairy walls would be finished in cream, the exterior the same with green roof and doors.

Adjoining the dairy I would have a large cream safe, where a constant current of air streaming through would keep any standing cream clean and cool. And outside in a safe place a smooth bench would be built to hold tinware drying in the sun. For the comfort of hot and tired milkers I would build on a hot and cold shower room, a grand refresher after a long day's work. The inner concreted cowshed would be completed with water troughs so that the waiting cows could drink.

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And just to give an artistic finishing touch to my dream cowshed I would hang baskets of green ferns in suitable places in the dairy to give it that cool refreshing appearance we like to associate with places where milk and cream are kept.—**Tiggety Boo, Kati Kati.**

"COW spanking" is no drudgery in our cow-byre, for there is ample sloping concrete floor space, and with the plentiful supply of water at each end of the yard this is very easily kept spotless. Concrete paths to and from shed keep both cows and yards clean.

There are hay racks in each bail; the ventilation is good, as also is the drainage. The concrete yard is large and there are chains between yard and byre. Time passes quickly, as we get a variety of entertainment during milking hours from our shed radio, and I am sure the cows too enjoy the music. Our 28 gallon electric heater is a boon—always hot water on tap. The shed, milk house, and adjoining wash room (set-in enamel wash basin, soap, towels, combs and mirror—yes, really, and why not?) are all finished in cream enamel, banded with blue,

and as it all faces the sun, we feel the gleaming interior has fully justified the initial outlay in paint, cleanliness being so important and desirable. The machines of course must go like clock-work and—no stripping!—**Cecily, Southland.**

IF dreams come true, my cowshed will be built and fitted so that the cows can be stall fed during the cold winter months. It may cost a little more than an ordinary cowshed, but the cost of covers for the cows will be greatly reduced if needed at all. The floor of the shed will be concrete, or wood well tarred and sanded, and there must be a good drainage system. In front of the bails there will be large

Competitions

DECEMBER

Have you forgotten our subject for the next competition? It is "Our Pets," and do let me have your entries by **January 15, 1943**, please.

JANUARY

Are you going holidaying this summer? I know that petrol and travel restrictions seem to most of us an insurmountable barrier, so I am going to send you digging back into the past for your holiday this summer. What did you do for the holiday that you remember as the happiest you ever spent? I think we all have one holiday that stands out above all the others.

"HOLIDAY MEMORIES."

This competition closes on **February 15**, and there are the two prizes: first 10s and second 5s.

"MARY,"

C/o "Journal of Agriculture,"
P.O. Box 3004,
Wellington.

roomy mangers with a division for each cow. In front of the bails there will be a space 3 to 4 feet wide, along which can be taken a wheel truck or barrow, with hay, chaff, or mangolds for the cows. Over the shed there will be a spacious loft for hay and chaff, with a bin and chute for the chaff so that it will not have to be carried down. There will be spouting round the roof, and water tanks to supply plenty of water for washing up, cleaning the shed and yard, and for supplying a drinking trough in the yard. The separator room will be fitted with washing up tub—wooden, and rather like an ordinary wooden washing tub, but not quite so deep, a water heater, and two large windows, one set each end of the room to admit a constant current of air.—**V.A., South Canterbury.**



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Travellers Three

THE very beautiful Babe lay in his mother's lap and smiled. And the mother smiled back at him. Her little treasure was very small, and very precious. Yet here he was lying with her in the hay-sweet manger—was it that the inn was too full for the mother and the Child? The very beautiful Babe was still sleeping softly when a shepherd came to the manger, bringing word of a new, brilliant star that hung low in the eastern sky.

"It is so bright," he said, "that it has attracted the attention of all the people around. All the travellers who came to the inn to rest are watching it. And it is slowly moving across the heavens. Come, come, and see for yourself."

But the mother was weary, and the Child was very tiny, so Joseph went instead.

Out in the dark clear night was a brilliant radiance. No moon on this, the first Christmas night, but had there been even its brightness would have been outshone by the beauty of the star. Slowly, very slowly it moved across the heavens—star of very great light.

And again the shepherd came to the manger. "It is said that the star is guiding three travellers to a King who has been born. And they bring with them gifts—gifts that are fit for a king only. There is great wonder as to where the star is guiding them, as to where the infant King is lying."

And Mary only smiled in her slow sweet way.

Then came a time in the very first Christmas night when the bright star paused . . . and its light was so bright as it hung over Bethlehem that it lit the inside of the manger, and showed to the travellers three the Mother and the Babe, together in the manger.

"We have come to you," said the first traveller as he bowed low before them," for we hear that unto you a Son has been born, and He is a King. My gift for Him is gold—no greater need will he have of anything."

"Yet my gift is greater," were the words of the second traveller, as he bent to pay homage to the infant King. "For my gift is the gift of frankincense, and it is brought from far lands."

"But I would bring for Thee gifts more precious than these," and the rich garments of the third traveller brushed along the floor as he bowed low. "I would bring for Thee the gifts of Love and Happiness, were it in my power to do so. I would bring Thee the gifts of Joy and Pain, for without suffering no joys are sweet. And I would bring Thee the gifts of Laughter and Eternal Youth. With these as your heritage, O King, no ruler could

be greater, no king wealthier, and no one anywhere could be as happy." "But," and as he spoke he brought out myrrh, "as these are not in my power to give, I humbly offer you my gift of myrrh."

And as Mary the mother accepted the gifts for her little Son, she spoke softly to the third traveller.

"To you will my Son give back the gifts you would give unto Him. For you He would always wish Love and Happiness, Joy, and a very little Pain, Laughter, and Eternal Youth. For He is a King, and His powers are unlim-

ited. Go on thy way, O traveller. May you never again be weary, and may all your wishes for my Son be returned threefold."

Again the travellers bowed low before the Holy Family, and took their departure. And as they passed from the manger the third traveller turned back to see again the beauty in the eyes of the Child, and the joy in His sweet smile.

So they journeyed forth again . . . but always was the third traveller the most blessed of the three. For his were the precious gifts that were given to him for the very first time, and his heritage he has passed down to the peoples of the ages who lived after him.

The Passing of the Flowers

WITH the drifting of the leaves, my flowers are passing—on some days, slowly and imperceptibly, on others suddenly and completely. There have been times lately when I could scarcely find one perfect blossom for my breakfast table. This is important to me if I would face the day with courage, and that is why, whenever possible, I carry my breakfast tray to this sheltered corner of my garden.

Here, in the early summer, the pink briar roses cluster, and sometimes, to my infinite delight, a freshly-opened bud will fall across my table. It is with eager steps I seek my breakfast-parlour through the summer days, never knowing what fresh treasure I shall find. Sometimes it would seem as though a star had fallen in the night, and broken into little bits, strewing my bricks of red with blue forget-me-nots.

And later in the season, when the lavender comes—lavender and bumble

bees, and butterflies white and blue—I start the day with a song on my lips, and the glow of morning in my heart. The flowers are passing with the year, but today, in this corner, the air is warm. Again I share in the poetry of the garden, and the little voices of the summer are with me. Today I hear the music of the trees, for I am kissed by the sun, and the winter is still far distant.

But the joy in the sun of a dying year must always be brief and mingled with sadness. Even as I write, there is a sudden chill in the air, the robin's song has suddenly ceased, and the empty silence fills me with loneliness—loneliness and memories.

Yet the old year passes into the new, and we await the joy of little things new-born . . . I know that there is no death. Those that have passed from sight are just asleep, to wake again, like the trees and the blossoms in God's own springtime.

The Bicycle that looks Perfect is Perfect and STAYS Perfect

BSA

These days you may have to wait for your new B.S.A. — but you'll be glad you did!

The graphic features a stylized background with the text 'The Bicycle that looks Perfect is Perfect and STAYS Perfect' in a bold, italicized font. Below this, the letters 'BSA' are prominently displayed in a large, bold, sans-serif font. To the right, there is a small illustration of a man in a suit holding a sign that reads 'These days you may have to wait for your new B.S.A. — but you'll be glad you did!'. Above the man is a circular logo with the letters 'BSA' inside.

Here's a Strange Impulse

I CURED my strangest impulse by yielding to it. I had always been, and still am, intrigued by matrimonial advertisements, and one day I answered one. It sounded too good to be true, and read something like this, "Lonely young man, good position, car, aged 28, well connected, wishes to meet young lady, fond of dancing and outings. View to matrimony."

I suppose I did it more for a joke than anything else, and it was with some trepidation that I awaited the outcome of my "impulse." Sure enough, a few days later a letter arrived in an unfamiliar and rather attractive handwriting, stating that if I was still interested he would like to meet me. I had stated in my letter that I assumed his "view to matrimony" was merely a condition insisted on by the paper, as I knew that all such advertisements had to have this somewhere in them. To cut a long story short, I sent the mysterious cavalier my telephone number, which he promptly made use of, and over the 'phone his voice sounded educated, and he quite full of fun. We fixed an evening to meet, and arranged that he would pick me up at the end of the street.

I was scared stiff by this time, but determined to see the thing through, so duly presented myself at the appointed place at the time agreed on. He wasn't there. I waited for about five minutes, and all of a sudden a big car came hurtling out of the night, turned in a flourish in the middle of the road, and with a scream of brakes drew up beside me and "HE" got out. Well, I decided, he wasn't so bad. He had thick glasses, but apart from that was young, well dressed, and not bad-looking. He grinned and launched off into a lengthy explanation about how he hadn't been able to find the place, and had gone through two tunnels looking for it. No trouble to him—

the tram tunnel, strictly forbidden to motorists, and the motor tunnel. He had a companion with him, a farmer, who occupied the back seat, and they kept up a breezy conversation all evening on every subject from politics to poetry.

We went for a long drive at a pace which was at times, to say the least of it, exhilarating, and at a petrol station way up the Valley stopped for petrol. I noticed that he paid for it from a huge roll of notes, and began to wonder if the two of them had held up a bank or something and were spend-

CHRISTMAS GIFTS.

"All the mornings of my life
I spun for You on field and tree,"
Said the spider to a Child,
Whose Mother laid the glistening web
On His small and downy head.
"All the evenings of my life
I shone for You in flower and hedge,"
Said the glow-worm to a Child,
Whose Mother set the shining beams
At His cradle's head and feet.
"All my days of love and joy
I have given unto You,"
Sang the Mother to her Child.
While before them, silently,
The world passed by in gratitude.

—Margery Easterbrook.

ing their ill-gotten gains. I was a fool all right, and though reason told me I shouldn't have come, was really thoroughly enjoying myself. We stopped for supper at a restaurant and again the roll made its appearance. I've never before or since seen a bigger one. Then we drove back to town and dropped the back seat driver at his "aunt's" place. Now, I thought, what's going to happen? But he set me down at my gate, and with a "Thanks for coming, and goodnight," off he drove into the night.

From that night, several years ago, I didn't set eyes on him until last Christmas, when I was in a train, and at a station up the line a noisy party came along, and my "impulse" detached himself from it and took a seat some way up the carriage next to a girl, with whom he was rapidly in earnest conversation. As I hid behind the pages of my magazine I thanked heavens it had been a dark night, and there was little likelihood of my being recognised. I often wonder WHY? But at least I satisfied my "impulse" and wonder how many other readers have yielded and with what results.—Cayenne, Wellington.

While the Log Burns . . .

"All This, and Heaven Too."

—by Rachel Field.

HERE is a book for holiday reading—why I say that is because it is one of those books that grip you, and you find it hard to put it aside once you have started to read it. The story tells of the life of Henriette Desportes, and is based on facts, which prove to be far stranger than any fiction. This book contains everything you could wish to find within two covers—drama, romance, and the joy of small, everyday happenings.

Henriette lived as a governess in the ill-fated household of the Duc and Duchesse de Praslin, and the story, in the first part, deals with her life here, and tells how she came to be one of the most talked-of women in France. She is an admirable character, full of courage, and with a wisdom that is heartening in these days.

The book is in three parts, for the life of the heroine is in three clearly-defined parts, and leads us from England to Europe, thence to America. Many characters people its pages, but these are so clearly portrayed that one is not muddled by their numbers. Of all the characters I think those of the Duc and Duchesse de Praslin are the most vivid—I know they will live in my memory. Here is a word picture of the Duc for you, as Henriette saw him for the first time:

"He had been standing close to the hangings, but now he took shape before her with extraordinary vividness. She saw that he was in his middle thirties, and that he wore a grey and green striped dressing-gown that accentuated his fairness, and the long lines of his body. His hair and the side whiskers which he wore trimmed close were yellow as corn silk, and the skin above them had a warm, healthy glow. His chin showed prominent, and clean-shaven with a deep cleft under a full lower lip. In contrast the upper one was short and thin, and when he smiled as he was doing now, the effect was youthful despite the high-bridged nose and the rather tired eyes. Those eyes were far from youthful, however; they were unmistakably those of a man who was experienced, and who could be inflexible as well as pleasure-loving."

"All This, And Heaven Too"—the title intrigued and puzzled me, but here is the explanation given by the author, in the frontispiece:

"The title of this book is accredited to Matthew Henry (1662-1714), who wrote of his father, the Reverend Philip Henry: 'He would say sometimes when he was in the midst of the comforts of this life—"All this, and Heaven too!"'

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Christmas Time Is Carol Time

YES, the world over Christmas time is Carol time, and it always gives me a special thrill on Christmas morning to know that in other lands other folk are singing the same hymns and carols as those we are singing and those we all know and love. One of our readers, "London Lass," has been particularly interested in carols this Christmas, and she has written for you some of the stories she has come across in her search for stories behind the carols. I know you will enjoy this special Christmas treat.

HAVE you ever had a thrilling adventure that is only thinly disguised as a responsible job, Mary? If so you'll know how I feel. For three weeks or so I have been the busiest and happiest person in Wellington, preparing a programme for the Song Group of the British Music Society. The topic for the evening is Christmas music, so picture me haunting the Reference Library, talking to folk who have studied in Europe and folk who come from other lands, gathering mental pictures from them, and arranging to dramatise some of the carols. Literally eating, sleeping, dreaming carols, and loving every minute!

I am planning to describe a scene as in a mirror, and each time I cease speaking that particular carol will be sung without any announcement from me. For instance, in the villages of Czecho-Slovakia on Christmas Eve the small children rock their dolls' cradles by wayside figures of the Virgin and Child, while they sing the Rocking Carol. So I will have a very simple tableau of the Nativity at the back of the room, while two small girls rock their cradles as they sing.

I have a Swedish one too that is really captivating and gay. Its tune was borrowed for "Good King Wenceslas," but I shall have it sung to its own words, and I know they are a happy combination.

"Spring has now unwrapped the flowers
Day is fast reviving,
Life in all her growing powers
Toward the light is striving;
Gone the iron touch of cold,
Winter time and frost time,
Seedlings, working through the mould
Now make up for lost time."

For another, picture a dusty road under an intensely blue sky. Down a winding hill road, with jaunty light-hearted air, come three figures, shepherds from the mountains of Abruzzi. Their broad-brimmed hats adorned with peacock feathers and red tassels frame their flowing tresses and flashing dark eyes. Under their coats of blue linen can be seen bright red vests, and from a belt hangs a capacious leather pouch. In comradely fashion they proceed playing for their own pleasure, as well as for any appreciative listener, folk melodies on their pipes. Two of these are of the clarinet type, and one a primitive bagpipe. Anon they come

to a wayside shrine. There they pause, while with childlike simplicity and eager devotion they play before the sacred figure of the Virgin and Child. (A friend of mine has seen this happen, when she was studying in Rome.) One of the airs used in this way was noted by Handel when on a visit to Rome, before he wrote "The Messiah." It found a great and lovely destiny in his hands as the Pastoral Symphony.

When I turned to the old Germany, that land so rich in Christmas customs

HOMEMAKER.

She has a way of beautifying things:

Of putting flowers in a ginger jar,
So that their petals flame like scarlet wings.

She has a femininity touch

Even in placing antique coloured flasks
Against old pewter—bluer than a star—

A woman's household ways may mean so much!

There is a priestliness in common tasks;

There is a lyric poetry of things,
An artist's way of placing plums and pears,

(O, little wonder that my lady sings,
For keeping house is such a happy game

Amid the relics of an ancient day!)

She has a way of halting on the stairs
To readjust a tilted picture frame

That—really—nearly takes my breath away.

and carols, I found the best loved carol of all had come to the world by a happy chance. In a tiny, snow-bound mountain village one Christmas Eve, the organist found with dismay that his beloved instrument was out of order. He appealed to his friend, the schoolmaster. "Can you write something by tomorrow, simple enough for the children to sing without accompaniment?" And the schoolmaster took his pen, and quickly as though inspired wrote "Silent Night, Holy Night." Who shall say that this little gem of simplicity and perfection came by chance? For that too I shall have the tableau, with dimmed lights.

I am going to include carols from France, Italy, America and England, each in their appropriate settings. And



"Look what Santa brought me!" Baby Corey, Columbia's youngest star, thinks his new toy is just grand.

because carols have a universal appeal from whatever country they come, they create the Christmas story afresh in every heart. And so I shall close with a sweet and wistful one of our own country, written by Eileen Dugan. Here are two of its verses:

"Had my Lord been born here in the time of rata,
Three dark-eyed chieftains would have knelt to Him,
With greenstone and mats and the proud huia feather,
And the eyes of Mary, seeing, would grow dim.
Oh, my heart goes crying through these days of waiting.
We too have oxen and our straw is sweet,
We too have shepherds and stables and a manger,
Oh, for one clear footprint of His little feet!"

Don't you agree that I'm a very fortunate "London Lass?"

TRY separator milk as a substitute for starch next wash day. Not only does it make a really good job, but it is such a help with kiddies' frocks in the summer. My men folk always say a pudding is no good unless they can put sugar on it, so I nearly always leave the sugar out of my puddings. If you get many envelopes that are not gummed up, it is not much trouble to undo the rest of the envelope, turn it to the other side, then remake, using the unused top flap to regum. And out the envelope can go again, with, if necessary, a scrap of stamp paper to close it.—D.L., Otago.

Mary's Mixing Bowl

Tested Recipes

SPICED RABBIT WITH BUTTER BEANS.

Soak $\frac{1}{2}$ lb. dried butter beans overnight, then skin. Chop 1 onion, and put into a saucepan with a jointed rabbit, $1\frac{1}{2}$ cups water, $1\frac{1}{2}$ tablespoons brown sugar, $\frac{1}{4}$ teaspoon mace, 6 cloves, 1 teaspoon ground ginger, a little salt, pepper, beans. Cover with tight-fitting lid, and simmer over low heat till rabbit is tender and beans are soft. Remove cloves, thicken gravy, and serve.

VEGETABLE CUSTARD.

1 cooked cauliflower, 6 tomatoes, $\frac{3}{4}$ pint milk, 2 heads celery, 2 eggs, 1 oz. cheese, seasoning. Cut cauliflower into sprigs, divide boiled celery into neat pieces, skin and slice tomatoes. Place a layer of cauliflower or celery in the bottom of greased casserole, season to taste and add a layer of tomato. Repeat layers till dish is three-parts full, finishing with cauliflower. Whip eggs slightly, add seasoning and milk, strain over vegetables and bake in moderate oven till custard is set, taking care that

it does not boil and consequently curdle. When set sprinkle with grated cheese and brown under griller.

FIG AND TOMATO CHUTNEY.

Pare and core six apples, chop coarsely, together with six ripe tomatoes, and 12 dried figs, mince one small onion, one clove of garlic together, add to figs with one teaspoon of ginger, $\frac{1}{2}$ cupful of honey, 1 tablespoon salt, 2 cupfuls of vinegar, $\frac{1}{2}$ cup sugar, and $\frac{1}{4}$ teaspoon cayenne pepper. Mix well together, cook slowly for two hours or longer, pour hot into jars, and seal at once.

ROSE PETAL CONSERVE.

Gather 1 lb. of red or pink cabbage rose petals, cover with water, and wash well, add $\frac{1}{2}$ pint of water, cook gently half an hour, pour off liquid, squeeze the petals; return to saucepan with another $\frac{1}{2}$ pint of water, 3 lb. of sugar, juice and rind of a large lemon. Simmer $1\frac{1}{2}$ hours till petals are soft; stir in 1 teaspoon of carmine. When cool,

add 2 drops of attar of rose, then bottle.

PASSIONFRUIT CAKE.

$\frac{1}{4}$ lb. butter, $\frac{1}{2}$ lb. flour, $\frac{1}{2}$ teacup milk, $\frac{1}{2}$ lb. sugar, 3 eggs, 1 teaspoon baking powder.

Mix all ingredients, adding flour last, in which baking powder has been mixed, baking in buttered sandwich tins. Boil a little icing sugar and passion fruit together. When cool, spread between. Make icing for top, with icing sugar and passion fruit juice.

STUFFED TOMATOES.

Tomatoes, 1 dessertspoon butter, 2 tablespoons chopped onions, salt and pepper, 2 tablespoons bread-crumbs, 1 teaspoon chopped parsley, 2 tablespoons milk.

Cut tomatoes in two, take out some of the pulp, mix the other ingredients together, and fill tomatoes with the mixture. Cover the tops with bread-crumbs, and bake in oven till soft, but not broken. Serve on toast.

STUFFED TOMATO SALAD.

Select some large tomatoes, 1 apple, nuts, celery, mayonnaise dressing, lettuce-leaves. Cut tomatoes in halves and scoop pulp from each. Peel apple and chop it finely; cut celery into crescents. Wash lettuce-leaves, chop nuts roughly and mix all these with the tomato pulp. Place half a tomato on



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each lettuce leaf, fill the case with the mixture and pour in a little mayonnaise dressing. Sprinkle nuts on top of each tomato.

DRIED-APRICOT BREAD.

Take $\frac{3}{4}$ cup dried apricots, 1 egg, 1 cup sugar, 2 tablespoons butter, 2 cups flour, $\frac{1}{4}$ teaspoon bicarb. soda, 3 teaspoons baking powder, 3 teaspoon salt, $\frac{1}{2}$ cup orange-juice, $\frac{1}{4}$ cup water, 1 cup chopped Brazil nuts. Soak apricots for $\frac{1}{2}$ hour, drain and chop. Beat egg till light, stir in sugar and mix well; add melted butter and stir. Sift flour with baking-powder, soda, salt and add alternately with orange-juice and water. Add nuts and apricots, mix well, pour into well-greased loaf-tin and bake in moderate oven.

MINT JULEP.

Squeeze juice from 8 lemons, reject-ing seeds. Pick leaves from two bunches of mint, keeping most perfect sprigs for Garnish (about half a bunch). Add mint-leaves, 2 cups sugar and $\frac{1}{2}$ cup of water to fruit-juice. Allow to stand for half an hour (or till sugar is dissolved), turn into punch-bowl, add ice and $1\frac{1}{2}$ quart of ginger ale and serve immediately in sparkling water glasses.

JELLIED HAM SALAD.

2 cups chopped lean ham, 2 dessert-spoons cold water, $1\frac{1}{2}$ tablespoons gelatine, 1 hard-boiled egg, 3 tablespoon-fuls chopped chutney, seasoning, 1 cup hot stock, lettuce-leaves. Soften the gelatine in the cold water and dissolve in the stock; stir in the ham, seasoning and chutney. Slice the hard-boiled egg and place a slice at the bottom of small moulds, pour in the mixture and allow to set. When cold turn each out on to a lettuce-leaf.

WHITE FISH SALAD.

Two cupfuls cold fish, cucumber, let-tuce, beetroot, 2 hard-boiled eggs, mayonnaise, mustard and cress. Flake the fish, peel and slice the cucumber, wash and dry the lettuce and line a salad bowl with the outside leaves, us-ing a layer of thinly-sliced beetroot to outline. Shred heart of lettuce and mix with the fish, seasoning lightly. Add mayonnaise (keep a little back) to cress and mustard. Then add the fish mixture. Arrange in centre of bowl and garnish with hard-boiled eggs and remainder of mayonnaise.

DROVER'S CHRISTMAS GOOSE.

Wash, dry and cut into slices $1\frac{1}{2}$ lb. liver, rub slices in a mixture of flour, salt and pepper. Cut 4 half-boiled onions into slices and mix with 1 cup of fine breadcrumbs and 1 teaspoon powdered sage. Put alternate layers of the liver and savoury mixture into a greased fire-proof dish, add $\frac{1}{2}$ pint stock or water and small pieces of dripping on top. Bake $1\frac{1}{2}$ hours in moderate oven.

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CHICKEN SALAD.

Cut up crisp lettuce, put in salad bowl, arranging well up the sides. Into the centre of this pile some cut-up cold steamed or boiled chicken, with finely-cut cooked ham. Garnish the edges with sliced tomatoes, and hard-boiled egg whites chopped. Pour over the meat part a good mayonnaise sauce or salad dressing not allowing it to spread to the sides.

SAVOURY MARROW ENTREE.

Choose a long thin marrow, cut off four rings, remove seeds and cook in a casserole dish or steam with a little butter pepper and salt. Fry 2 small sliced onions add 4 skinned and sliced

tomatoes and cook for a few minutes. Strain marrow liquor into onion and tomato, and thicken with a little flour. Put marrow on to rounds of buttered toast fill centres with onion and tomatoes. Sprinkle grated cheese over and serve hot.

LEMON TEA CAKES.

Rub into $1\frac{1}{2}$ breakfastcups flour 4 oz. butter or lard; add a heaped teaspoon Edmonds baking bowder, and mix thoroughly; then add 6 oz. sugar, the rind of one lemon, and a little of the juice. Mix into a moderate paste with 2 well-beaten eggs. Divide into cakes, place on a greased oven shelf, and bake in brisk oven for 20 minutes.

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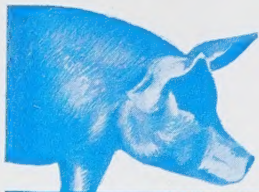
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